This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

No.

BOSTON

MEDICAL LIBRARY,

19 BOYLSTON PLACE.

TRANSACTIONS

OF THE

BRITISH LARYNGOLOGICAL AND RHINOLOGICAL ASSOCIATION.

DURING THE YEAR 1895.

LONDON:
THE REBMAN PUBLISHING COMPANY, LIMITED,
SUCCESSORS TO F. J. REBMAN,
11, ADAM STREET, STRAND.

1895.

TRANSACTIONS

OF THE

BRITISH LARYNGOLOGICAL AND RHINOLOGICAL ASSOCIATION.

DURING THE YEAR 1895.

LONDON:
THE REBMAN PUBLISHING COMPANY, LIMITED,
SUCCESSORS TO F. J. REBMAN,
11, ADAM STREET, STRAND.

1895.

BOSTON MEDICAL
APR 13 1897
LIBRARY.

CATALOGUED
APR 13 1896
E. H. B.

Dr.E.H.Brigham.
Asst.Librarian
Boston Medical Library
19 Boylston Place
Boston. Mass.

B. F. Stevens.
4. Trafalgar Square.
London, W.C. March 16. 1897

Abbreviated Address for Telegrams Uoda London.

Dear Sir,

In reply to your letter of February 10th regarding Transactions of the British Laryngological Association I have to say that the parts for 1895 which you have received form Volume 5

BOSTON MEDICAL
APR 13 1897
LIBRARY.

CATALOGUED
APR 13 1896
E. H. B.

Dr.E.H.Brigham.
Asst.Librarian
Boston Medical Library
19 Boylston Place
Boston. Mass.

B. F. Stevens,
4. Trafalgar Square.
London, W.C. March 16. 1897

Abbreviated Address for Telegrams Uoda London.

Dear Sir,

In reply to your letter of February 19th regarding Transactions of the British Laryngological Association I have to say that the parts for 1895 which you have received form Volume 5 [illegible]

4134

BOSTON MEDICAL
APR 13 1897
LIBRARY.

THE BRITISH LARYNGOLOGICAL AND RHINOLOGICAL ASSOCIATION.

TWENTIETH GENERAL MEETING, JANUARY 11th, 1895.

President—Dr. W. McNeill Whistler in the chair.

Twenty-one Fellows and Visitors were present.

The minutes of the previous meeting were read and confirmed.

The balance-sheet was circulated amongst the Fellows.

Dr. Macintyre's motion for an additional Secretary was deferred, in his absence, at his own request.

Dr. Whistler's deferred motion referring to the office of Treasurer was further postponed.

The proposal by the Council, "That the Annual Dinner be postponed till the Summer Meeting (to be made a special one), and that the President's Address be given at the same time," was moved by Dr. Wolfenden and seconded by Mr. Mayo Collier, and after some discussion by Messrs. Wilkin, Bark, Mayo Collier, and others, was carried.

The Hon. Secretary read the report of the Otological Sub-Committee appointed to consider the amendment to Mr. Stoker's motion, and the contents of the circular which he (the hon. sec.) had issued under the Committee's directions, to ascertain the feelings of the Fellows upon the addition of Otology to the work and title of the Association. The result being, that out of a total of seventy-three, fifty-seven had replied in terms of unqualified approval, the Council recommended the adoption of the report of the Sub-Committee, with the change of title to British Laryngological, Rhinological, and Otological Association.

Mr. Wilkin moved the adoption of the report of the Council, and Mr. Bark seconded.

The President put the motion to the meeting, and it was carried.

Dr. WOLFENDEN. *Case of Recurrent Papilloma; Epithelioma; and Laryngo-Fissure.* (This case is exhibited to the Association to elicit an opinion as to the desirability of any further operative measures.)

A. B. consulted me in the autumn of 1892 for hoarseness, which had existed with him for nearly a year, latterly having become worse. He was aged forty-eight, of sound constitution, with no history of syphilis, and for the whole of his life had been occupied as a partner in one of the best known manufacturing businesses in London, spending much of his time in a hot workshop. There was observed laryngoscopically a pinkish-grey growth situated on the surface and edge of the right vocal cord, nearly completely covering it, the movements of the cord being perfect. This growth was removed endo-laryngeally, with much improvement to the voice, but in December, 1892, a recurrence had taken place at the anterior end of the right vocal cord and in the anterior commissure, all of which growth was removed. During the year 1893 there were several recurrences, the larynx apparently not being free from growth for more than a month or two. In every case of removal a microscopical section was made, and there was never evidence of anything but simple and typical papilloma. Having regard to the age of the patient, and the persistent recurrence of the growth, it was frequently pointed out to him that the time would probably shortly arrive when it would be wise to open the larynx, and remove the whole growth by internal operation. So far it had (during 1893) been confined to the right vocal cord and anterior commissure, each microscopical examination had revealed only papilloma, the movements of the vocal cord had been in no way impaired, and the patient's condition as to general health was good. The possible dangers of laryngo-fissure were pointed out to the patient, and while there was nothing distinctively indicative of malignant disease he was averse to operation. From this date he came under the joint care of Mr. Richard Lake and myself.

In May, 1894, the growth appeared to be less upon the upper than upon the under surface of the right vocal cord (subglottic), though keeping a pinkish-grey, soft, and typically papillomatous appearance. But in May and June, 1894, this subglottic growth, a large portion of which was removed endo-laryngeally, showed a histological change in the portion examined—the epithelial elements showed a distinct and suspicious tendency to dip into the stroma of the growth. In this portion of the growth examined there was nothing characteristic of epithelioma, but the movement of the vocal cord was considerably impaired. This, however, improved considerably subsequently to operation, but never was recovered entirely. The voice remained hoarse. However, the condition was considered by us sufficiently suspicious to renew our suggestion of laryngo-fissure, but the patient's business engagements made him averse to it at the time.

He was seen by one or other of us two or three times between June and September, 1894, and the larynx always presented some growth projecting beyond the edge of the right vocal cord, and apparently subglottic chiefly, a small portion of growth at the anterior commissure, a little apparent

papilloma on the right ventricular band, and four small and discrete papillomata on the surface of the left ventricular band.

During July, August, and September, 1894, the patient's condition remained the same, and there was no apparent increase of growth, but in the first week of October there was noticed a considerable development of the growth of the right side, the voice was almost extinct, and there was considerable interference with breathing upon exertion. Opening of the larynx was now urged upon the patient as no longer possible of delay, and accordingly on October 17th, 1894, he was put upon the operating table, high tracheotomy performed, a Hahn's canula inserted, and the thyroid cartilage incised. This was found to be soft and infiltrated considerably in the lower and right portion with growth, and the little prethyroid gland was distinctly cancerous. There were, however, no other glands involved. As much of the cartilage was cut or scooped away as appeared to be involved, and with knife and scissors those parts of the interior of the larynx were freely removed that were invaded by new growth, and the whole was afterwards thoroughly cauterized with concentrated chromic acid. The parts were not sutured, and it was intended to leave the patient in Butlin's position, and remove the Hahn's canula.

Deglutition was rather difficult and a good deal of fluid found its way across the larynx on swallowing. Hahn's canula, which was removed the day after operation, was therefore replaced, being worn by the patient with much more comfort than an ordinary tracheotomy tube. The patient was kept in a recumbent position, and deglutition was rendered easy by adopting the position recommended by me some years ago in the dysphagia of laryngeal phthisis—viz., lying on the belly, with the head low and feet high.

The patient made a good recovery, without any signs of bronchitis, etc., and ten days after operation the tube was permanently removed, and the patient allowed up for a time daily.

During December he was well enough to go to his place of business, without pain or discomfort, and with some return of voice, which, however, was low, gruff, and hoarse. Gradually the breathing has become more stridulous, which may be attributed to the falling in of the right side of the larynx, owing to removal of a portion of the thyroid cartilage, and to the presence of a cicatricial band of tissue extending round the base of the epiglottis, and the right side of the larynx to the right arytenoid cartilage, which was not removed. The glottic chink is now wavy and not very large, the contraction of the parts accounting for the dyspnœa. While there is no sign of return of growth upon the right side of the larynx, there has been a recurrence of papilloma (microscopically examined) upon the left ventricular band, which has been freely removed endo-laryngeally.

In the first week of January the patient apparently caught cold, and had a sudden attack of laryngitis with considerable inflammatory swelling of the soft parts of the larynx, which, along with the contraction from operation, rendered breathing difficult, especially at night. The application of Leiter's coil reduced this very quickly, but the question which now arises is, is it desirable, in view of the development of further papilloma in the left ventricular band, to again open the larynx

and clear away the affected tissues of that side, or to limit any further interference to the insertion of a tracheotomy tube? The portions of the growth removed on October 17th leave no doubt as to its epitheliomatous nature.

The moral of the case is obvious—that much earlier operation would have been desirable. Up to May, 1893, the growth appeared to be limited in situation to the parts above the vocal cords, but the revelation then of a sub-glottic growth, which renders it probable that the disease had been sub-glottic for a long time before it actually declared itself, seems to point to the view that if the patient's consent had been given to very early laryngo-fissure the result might have been more favourable.

The case will be subsequently reported in greater detail.

Dr. WOLFENDEN. *Curious Malformations of the Pharynx.*

Case I.: The patient was a man aged twenty-four, a dairyman by trade, who came to me on November 21st, 1887, complaining of slight sore throat, which was due to a little subacute pharyngitis. Examination of the throat revealed a very curious condition. From the posterior aspect of the soft palate above to the posterior faucial pillars at each side, and attached below apparently to the glosso-epiglottic ligaments, was a fleshy septum, completely cutting off the naso-pharynx from the oral pharynx, completely hiding the posterior and lateral pharyngeal walls, and almost cutting off the œsophagus from the mouth, except that there was an arched opening just above the epiglottis, which, though only a little wider than the epiglottis and three-eighths of an inch from top to bottom, apparently allowed the passage of food perfectly. There was an opening from the pharynx into the naso-pharynx by a slit, vertical in direction, and in a state of repose constantly open, and which lay behind the uvula, which depended from the soft palate in a perfectly normal condition. Through this opening a little of the mucous membrane of the naso-pharynx could be seen, and so far as was visible it was perfectly normal. The membranous web was not apparently attached to the posterior pharyngeal wall at all. It was fairly thick, though not so thick as an ordinary syphilitic palatal adhesion, and of the appearance and colour of normal mucous membrane, smooth, moist, and red. The opening in the inferior part was arched, and the epiglottis lay in its inferior aspect, perfect and free. It was remarkable that, with such a small opening as this, the patient should never have experienced any difficulty in swallowing. The man was not himself aware that he possessed any anomaly of the throat. He was robust, well-grown, and in good health, and no history of syphilis, diphtheria, or antecedent ulceration could be obtained. He had never, to his knowledge, been ill. There was no dyspnœa or dysphagia, and never had been any symptom to call his attention to it. I should have cut through the membranous web had the patient remained under treatment, but he disappeared after a couple of visits, and I never saw him again. At the time I was inclined to think it a congenital anomaly in the absence of any antecedent condition to account for it.

Case II.: In the same year I saw another case, occurring in a young girl of about fifteen years of age. She had a membranous web extending

right across the back of the throat from behind one posterior faucial pillar to that of the other side, free above, but attached below to the posterior pharyngeal wall about the level of the epiglottis. The entrance into the œsophagus was quite free, and so was that into the naso-pharynx, but the membrane formed with the posterior pharyngeal wall a sort of pouch, extending from one side to the other, into which a probe or tampon could easily be introduced to its bottom.

As in the preceding case, there was no history of syphilis or diphtheria, or any antecedent ulceration of the throat. The girl had always enjoyed good health, and I was inclined to believe this case also congenital. In both cases the condition had arisen beyond the knowledge of either patient, and neither of the children had been subject to any disorders within their recollection. In neither case was the slightest inconvenience caused by this anomalous condition.

I merely mention these cases to this Association because Mr. Lennox Browne brought forward a case of congenital malformation at the last meeting which he considered to be unique. Both these cases have as much reason to be considered congenital as the one reported by Mr. Browne, and though they occurred in my practice over seven years ago, I never recorded them before.

Mr. LENNOX BROWNE: As I have often said, Mr. President, I think one is placed at a great disadvantage in offering an opinion on a case under the circumstances of its being brought before this Association, because the Fellow who brings the case has had long experience in watching it—in this case, for two years and a half—and, therefore, any opinion given on a cursory glance and short conversation, with many distractions, is, of course, to be taken with a considerable amount of discount.

I pass over any clinical or pathological points of interest that might suggest themselves as to the character of the disease in its early stages, as opposed to its later, and would simply express for myself, and, I am sure, for all the Fellows of this society, our thanks to Dr. Wolfenden for the exceedingly interesting case which he has brought before us, as well as the beautiful sections illustrating the pathological characters to be found after the growth was removed. As to the future, I entirely agree with Dr. Wolfenden's suggestion that it would be much better to do a simple tracheotomy. I cannot think that any resplitting or further attempt at radical measures would be in the best interests of the poor gentleman who is the sufferer, for I suppose we are all agreed that we could not do very much to prevent the inevitable termination. I do think that in view of increasing stenosis, and of the stridor, a provisional operation would still longer prolong his life. I would deprecate entirely any attempt at tubage, because with the disposition to further papillomatous development, which Dr. Wolfenden says has occurred, the passing and keeping of a tube in the glottis would probably be not only painful, but would be calculated to further excite proliferation of whatever character it may be, whether benign or malignant. There can hardly be two opinions that one would be bound to do a tracheotomy at an early date, and that is what I understand Dr. Wolfenden proposes to do. I can hardly think there will be any disagreement in that proposition.

The PRESIDENT: Looking at the case, it seems to me that it is just one of those in which further operation for removal of the growth would not be likely to give a good result. I quite agree that the only treatment now would be to do simple tracheotomy. I have had advanced cases of this kind where tracheotomy has prolonged life; in one case for a year and a half. The one I refer to was in the same stage as this case, and it ended afterwards by extension to the œsophagus.

Dr. WOLFENDEN'S reply: I am much obliged for the kind interest taken in and for the opinions given on the case I have brought before the society. I do not think it is desirable to do any further operation on a large scale. The only other operation would be excision of the larynx, which is a particularly unfavourable one, as we all know. I was inclined, and am still more inclined now, to put in a tracheotomy tube as soon as occasion arises, and to leave it so as to give rest to the larynx and relieve the breathing. I quite think it may prolong his life, for two years possibly; at any rate he has a better chance in that than anything else.

Mr. WILKIN. *Old Case of Syphilitic Laryngitis associated with Gumma of Apex of the Right Lung.*

This patient was admitted to the London Throat Hospital, under my care, on the 6th February, 1894, being sent in by a general practitioner as an urgent case for tracheotomy. She had been ill since the previous August, and was supposed to be suffering from phthisis. On taking the history it was found that she had been married nine years, had no children, but had had two miscarriages. The illness of August, 1893, commenced by what the patient called erysipelas of the head and face.

Examination of the Larynx revealed considerable swelling of the epiglottis; the false vocal cords were greatly swollen, meeting in their anterior half completely, but leaving a small triangular chink behind through which the patient breathed. The colour was dusky red.

Examination of the Thorax revealed consolidation of the right apex posteriorly, and moist sounds throughout. The sputum was examined on three separate occasions for tubercle bacilli, but none were found. The patient suffered from a dry distressing cough, dyspnœa, dysphagia, heavy night sweats, and delirium.

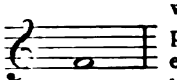
Treatment.—Iodide of potassium and liq. hyd. perchloridi, vapor conii, and syrup of Tolu and codeia for the cough.

The PRESIDENT asked whether any further search had been made for bacilli.

Mr. WILKIN said that since the third examination there had been no further search made.

Dr. DUNDAS GRANT. *A Case of Diplophonia.*

Miss D., aged thirty, teacher, had suffered for over two years with hoarseness affecting the lower register. Above F of the first treble space, where the transition into the upper thin register took



place, her voice was perfectly clear. On laryngoscopic examination, no abnormality was seen except visible loose vibration of the inner portion of the cords in the lower register, the approximation of the posterior third being imperfect.

Dr. Grant looked upon the case as one of a nervous affection of the internal thyro-arytenoid muscle.

Dr. WOLFENDEN: From the very slight examination one has been able to make of this very interesting case, there does not seem to be anything abnormal in the vocal cords. At the same time, I would suggest to Dr. Grant that, when he has time, he should make extra diligent search for any little nodes in the cords, because it strikes me that that voice is just the kind of voice that would be produced by a nodular condition of the cords. They may be of a fibrous nature, or little cartilaginous nodes. I have seen those little cartilaginous nodes in the anterior portion of the cord. Whether these have been found in this case or not I do not know, but in my opinion it is either that or else some perverted glottis action in which the anterior two-thirds of the vocal cords only are brought into close approximation, leaving the posterior third of the glottis comparatively open. I noticed that the cords were more approximated in their anterior two-thirds than in their posterior third. I think that Dr. Grant will do well if at his leisure he will make a careful search for little fibrous nodules.

Mr. LENNOX BROWNE: This case rather confirms what is a common experience. You have here a spare woman, probably anæmic and much below par, teaching a class of thirty pupils and forcing her voice. Personally I believe that these vocal anomalies are more often, in fact almost always, dependent on some faucial or pharyngeal trouble. I notice that she has a very long uvula, and that it not only does not retreat on taking a note, but also that when she breathes down through her nostrils it does not much elongate; it is, in fact, paretic. The paresis in the larynx is as Dr. Wolfenden says, at the posterior part, and probably it may be that the arytenoid muscles are not acting properly, though, of course, there is inaction of some portion of the internal thyro-arytenoids also. The glottis takes very much the figure that one gets in those cases. For my part, I should feel inclined to take off that patient's uvula and send her to someone to educate her how to properly produce her voice, and I should expect to see her recover it.

Dr. WOLFENDEN: I differ from Mr. Lennox Browne when he says that this is a case of paralysis of the arytenoideus muscle. I have had a good many years' experience at the Throat Hospital, where one would expect to see many of these cases, but I do not remember ever having seen more than one isolated case of paralysis of the arytenoideus muscle.

I understand from Dr. Grant that this girl is a Board school teacher. I would like to enter a protest from this society against the enormous work that is thrown upon young and undeveloped females in teaching in these Board schools. My late colleague, Dr. Greville Macdonald, some time ago wrote a little pamphlet on "School Board Laryngitis." There is nothing particular in that sort of laryngitis, but there is a great deal in the fact that many of these Board school teachers break down. I have seen a great number of cases, and they have led me to think that the whole system is a scandal, and that some public body or society would do a very useful service if they gave their attention to this matter.

Dr. Wolfenden suggested that the subject of Board school teaching

would be a very useful subject of discussion at some future meeting of the Association—a full meeting—so that any protest that is finally decided would come with much more weight.

Mr. LENNOX BROWNE: Some time ago, before the appearance of Dr. Macdonald's pamphlet, I had a collection of cases, and I wrote a letter to the late chairman of the School Board, whom I knew personally. His reply was very characteristic and rather cynical, it being to the effect that so long as the supply met the demand he was afraid there was nothing to be done. And these poor girls say to us, "Pray don't say much "about forcing my voice due to over large classes being the cause of my "trouble, for it is so easy to find other teachers." This circumstance only makes the protest all the more necessary, and I should like to very heartily endorse Dr. Wolfenden's remarks.

Dr. MILLIGAN: I should like to very heartily endorse the remarks of Dr. Wolfenden and Mr. Lennox Browne, and I think that any protest coming from such a society as this would have great weight. I have been extremely shocked with the number of cases of teachers' nodes coming to the Throat Hospital at Manchester. I think I may say that hardly a week passes that I do not see patients possessing these anomalies, and very often I think they are maimed for life; their voices are perhaps more or less recovered, but seldom entirely. I am quite sure there is far too much work thrown upon these teachers. They work in ill-ventilated rooms and the classes are often very large.

The subject has interested me very much for some time past. On two or three occasions I have complained to friends on the School Board at Manchester, and the complaint has always been met very readily; indeed, they have I know in two or three instances actually modified the work of the teachers. However, I do think that a protest coming from a society such as this would be more valuable than the efforts of any one individual.

Dr. BARON: I wish to emphasize what has just been said. We are constantly seeing these poor girls. Their livelihood is threatened, they hardly know what to do; leaving their work means practically to starve, and yet they are obliged to go on in this way. I think something might be done for them in the way of instruction in voice production. We all know that an hour's work badly done does more harm than several hours of the same kind of work if it is done well. Now I find these girls are entirely ignorant of how properly to produce the voice, and I have been sending them to a voice trainer in Bristol, who finds that they are ignorant of the first rudiments of voice production. I think if some means were adopted for instructing these girls, their throats would not go wrong so often as they do, and that all the more quickly because they are not taught how to use the instrument which Nature has provided them with, and on the health of which their livelihood depends.

Mr. BARK: I should like to support this protest. In Liverpool we have the same thing going on day after day, and week after week. These Board school teachers, especially young girls, come to the hospital on account of loss of voice, and I endorse the remarks of Dr. Baron that this is due to a great extent to faulty voice production, and that the cure

for the evil is in a proper method of voice production being introduced as part of their training.

Mr. LENNOX BROWNE: One more word, that is this: I have no doubt no one would expect me to contradict the view that these effects are the result of wrong voice production, but I think also that nothing could be more detrimental to the voice than having to speak to a large class, very often when there is a great deal of noise. I have even heard of one hundred pupils in a class, mostly young children, and, of course, in order to be heard, the teacher has to force her voice very much. I feel quite sure if Dr. Baron, Mr. Bark, and Dr. Milligan, and other Fellows living in the large provincial towns could manage to bring this matter under the notice of the local branch of the Tonic Sol-fa Association they would find a great willingness on their part to give instruction. The association is mainly composed of the middle and lower middle classes, the very class from which teachers are selected, but in no musical association is so much pains taken in the way of teaching good voice production. In the provincial towns there would be little difficulty in getting something done in the matter, in the direction I have indicated. In London, on account of its size, it might be more difficult.

Dr. DUNDAS GRANT'S reply: I have to thank you for having shown such great interest in my case, and to express my pleasure at the interesting course the discussion has taken. There can be no question about the necessity for some such steps as have been mentioned. I fancy that it is pretty well known that a great deal of the discomfort in the throat is caused, in the case of Board school teachers, by the dust from the chalk which they use so freely on the blackboard, and which they wipe off with a dry duster instead of a wet one. On all occasions, when the complaint has come under my notice, I have recommended the teacher to use either a wet sponge or wet duster, and my promise that that would effect a difference—I mean apart from other considerations—has frequently been fulfilled. Of course, the great question of the excess of supply over demand will open up, and the School Board may say, "What we want is greater discrimination in the selection of candidates," which I am sure would be very unpopular with one section of the community; and then they would say, "We want more money to pay for the teachers," which would be very unpopular with another section, the two interests pulling different ways. Such a protest as is proposed should be a very powerful one, and we should take great pains to have it thoroughly well backed up.

I shall certainly keep Dr. Wolfenden's remarks in mind, and report again if I find any indication of nodal points in the cords. With regard to Mr. Browne's suggestion concerning the uvula, I shall consider that with great respect, and if the result shows it to be correct, I shall be very happy to acknowledge it before the Association.

Mr. PERCY JAKINS. *A Case of Pulmonary Phthisis complicated with Epithelioma of the Pharynx in a woman thirty-three years of age.*

S. H., aged thirty-three, infant schoolmistress, unmarried. Patient was sent to the Central London Throat Hospital by Lord Montague on November 9th, 1894.

Family history: She was one of fourteen children; thirteen are still living, all healthy. Father died of "fits" at the age of sixty-two; he suffered for some time with what the patient described as "tumour in the throat." Mother died of diabetes, aged seventy.

Previous history: She had enjoyed fairly good health all her life till four months ago, since which time she has complained of an occasional cough and weakness of voice. For seven years past there have been periodical attacks of slight difficulty in swallowing, which has been gradually getting worse; no specific history. Her last attack of illness dated five weeks before admission, and this was characterized by increasing difficulty in swallowing, accompanied by pain and marked alteration of voice. From this time she rapidly lost flesh and strength.

Present condition: On admission she weighed six stone eight pounds, and was thin and emaciated. She referred all her troubles to her throat; cough troublesome; expectoration, muco-pus, tinged with blood and very offensive; there was pain on deglutition, but not severe; she was extremely weak, and said she had not slept for fourteen days, and had to be propped up in bed, being unable to retain the recumbent position.

On examination: Pulse 120, small, irregular; temperature 99·5 There was evidence of consolidation of the whole of the upper portion of the right lung. The left lung appeared to be healthy.

Throat.—In the pharynx was a large cauliflower growth which extended to, but not beyond, the posterior pillars of the fauces, which were free; the growth extended downwards. The root of the tongue, although swollen, was free. The arytenoids were œdematous, more especially the left; the vocal cords could not be seen owing to the amount of secretion, but after treatment this was much reduced, and the left cord was found ulcerated. As there was some room for doubt, my colleagues, Mr. Lennox Browne and Dr. Dundas Grant, at my request kindly saw the case with me, and advised removal of a small portion for microscopical examination; when this was done, the growth was found to present all the characters of epithelioma.

The treatment adopted before the patient was seen by my colleagues was based on the assumption of a syphilitic cause, and liq. hydr. perchl. and pot. iodid. were given in large doses, together with troch. antim. co. (which is "Plummer's" pill put up in a lozenge). Antiseptic sprays were also used for some time. Owing probably to the cleansing process there was a distinct improvement, she slept better and was more comfortable than she had been for weeks, but this did not last; she gradually sank, by November 27th only weighed five stone eleven pounds, and died on December 13th.

Post-mortem examination revealed the fact that the diagnosis was correct; the left lung was fairly healthy, the right was riddled with tubercle. The growth was found to extend into the œsophagus, causing a stricture, as may be seen in the specimen exhibited. This case is of considerable importance, showing how a tuberculous deposit may take on malignant growth. The sputum was examined and tubercle bacilli were found. For these notes I am greatly indebted to Dr. Frederick Spicer.

Dr. PEGLER, who read the paper, called the attention of the Fellows to the sections of the growth he had made for Mr. Jakins and exhibited under the microscopes. They were remarkable for the number and extent of the epithelial columns pervading the tissue. No giant cell systems had been discovered.

Dr. WOLFENDEN: It may be within the recollection of the society that I recorded a case, the details of which are to be found in the "Transactions." It was a case of early syphilis, which eventually developed tubercle, and ended with epithelioma and death. In the microscopical specimen there was distinct histological evidence of syphilis in the cells and tuberculosis. In one section which I showed here there was a tubercle with tubercle bacilli underneath an epitheliomatous tissue in the upper portion of the section. It was definitely proved histologically as well as clinically.

The PRESIDENT (Dr. WHISTLER) showed a case of *Bilateral Paralysis of Abduction of the Vocal Cords.*

The patient, a man aged twenty-eight, had applied to him at the London Throat Hospital in July, 1894, with hoarseness, pain, and cough, of several weeks' standing. He was wearing a tracheal canula, and stated that tracheotomy had been performed upon him twelve years previously. All that could be elicited in regard to the early history of the case was that for five years prior to the tracheotomy he had suffered from throat trouble with increasing difficulty of breathing. He made a very good recovery after the operation, but he had never been able to dispense with the tracheotomy tube. The laryngoscope showed very defective abduction of the vocal cords. On deep inspiration they barely reached the cadaveric position. There was no deficiency of adduction. The vocal cords were red and swollen. The acute congestion was specially marked over the left cord, with redness and swelling over the inter-arytenoid fold. There was no ulceration, or cicatrix in the pharynx or larynx—nothing pointing to any active specific disease; no evidence of anchylosis of the crico-arytenoid articulations. There was no cervical tumour, or any sign of intra-thoracic disease. Pressure upon the recurrent laryngeal nerves as a cause might, therefore, be excluded. The long course of the affection, the absence of any ataxic symptoms, and, on the contrary, the excellent general health of the patient did not point to any central disease as the origin of the paralysis.

The later acute laryngeal symptoms were evidently due to an intercurrent inflammation. There was no syphilitic history; and the laryngeal signs, though such as might frequently be found in connection with syphilis, were not specially pathognomonic of this disease. All that could be said in support of the possible syphilitic nature of the affection was that under the administration of iodide of potassium the laryngeal inflammation very quickly passed off.

The laryngoscopic image at present showed no signs of inflammation. The abductor paralysis remained as before.

Dr. WHISTLER thought that the paretic condition was the result of the long-continued respiration through the tracheotomy tube. He had

obtained some benefit by plugging the orifice of the tracheal canula, and this treatment, originally suggested by Dr. Gerhardt as a method of dilatation, was being carried out. He presented the case in the hope of obtaining an expression of opinion from the Fellows. However, as the hour was so late, and there was an important paper still before the meeting, he would not encroach upon the time of the Association, but would bring the patient forward on a future occasion to report progress, and for discussion.

Mr. LENNOX BROWNE. *The Micro-Organisms of Diphtheria.*

The author gave a brief demonstration, illustrated by lantern slides, of micro-photographs of the recognized varieties of the Klebs-Loeffler bacillus, both single and in association with various micro-organisms, especially with strepto-, staphylo-, and diplococci.

The exhibition comprised a series of eighteen examples, all of which had come under the personal observation of the speaker. Short clinical notes were given of each of the cases from which the micro-photographs had been prepared, so as to emphasize their respective and relative diagnostic and prognostic significance.

Witherby & Co., Printers, 326, High Holborn, London, W.C.

TRANSACTIONS

OF THE

BRITISH LARYNGOLOGICAL AND RHINOLOGICAL ASSOCIATION

DURING THE YEAR 1895.

LONDON:
THE REBMAN PUBLISHING COMPANY, LIMITED,
SUCCESSORS TO F. J. REBMAN,
11, ADAM STREET, STRAND.

1895.

THE BRITISH LARYNGOLOGICAL AND RHINOLOGICAL ASSOCIATION.

TWENTY-FIRST GENERAL MEETING, APRIL 19th, 1895.

President—Dr. W. McNEILL WHISTLER in the chair.

The minutes of the last meeting having been read and confirmed, the following gentlemen were elected Fellows of the Association:—

Dr. WILLIAM HILL,

Mr. J. SEFTON SEWILL.

Mr. LENNOX BROWNE. *A Note on the Bacteriology of Ozæna.*

Most of the Fellows are aware that Loewenberg has been for some years working to discover the specific micro-organism of ozæna, and, very much impressed by his recent article pulished in the "Annals of the Pasteur Institute"—Metchnikoff's department—I thought it would be interesting to have some cultures made, and bring them here to show you. The specimens almost entirely confirm all that Dr. Loewenberg has said on the matter. However, as that may not be familar to all, and is in any case of sufficient interest to be worth the recalling, I will briefly give you the result of his most recent conclusions, with such one or two comments of confirmation or modification as these specimens have suggested.

In agreement with much that Loewenberg has written as to the micro-organism of atrophic rhinitis exhibiting ozæna, it is no part of my intention to go into the morbid anatomy and pathology of the disease, nor to describe the microscopic appearances of the mucous membrane in different stages of the morbid process, for this has already been done very fully in the volumes of Loewenberg, Bosworth, and others. It has received attention in the various editions of my systematic work, and has been very amply discussed and illustrated at meetings of this Association by Wingrave. To the first of these observers we are indebted for a description of a special and characteristic microbe constantly found in the nasal

mucus of ozænic patients. Loewenberg makes a point of selecting for the purposes of cultures the mucous threads which he finds so often adhering to the nasal fossæ after expulsion of the main masses of crusts; but it does not seem that there is any marked difference in the cultures from either source, for such cultures appear to show that the organism can be found just as readily in the most recent mucous secretions as in the oldest ones or in the inspissated crusts, thus somewhat disproving Bosworth's suggestion that the crusts form a better culture ground than the fluid elements of the secretion.

The following is in brief Loewenberg's description of the organism :—

It is a coccus of unusually large size, arranged in pairs, these being often coupled together in chains.

Their shape is more cylindrical than most other diplococci, in which one generally sees some irregularity in outline, but these are in many cases constricted in the centre, in a similar manner to the pneumococcus of Friedlander.

The specimens before you show not only that these diplococci may be unencapsuled, but also confirm Loewenberg's later statement that others are frequently surrounded by a capsule which appears as a clear zone.

When stained with Ziehl's solution of carbolic fuchsin in alcohol the capsules are not affected, but with dahlia violet and acetic acid the capsules become tinted, and appear as a delicate halo round the cocci.

The tube cultures illustrate the observations of Loewenberg, that not only are the colonies abundant, but also that they present themselves under two different aspects—(1) small, round, yellowish colonies, which are compact and are confined to the substance of the gelatine; (2) larger, semi-translucent colonies of a white or milky-white appearance, which are raised above the surface of the medium rapidly coalescing, becoming irregular in outline when in contact, and becoming after a time more milky or light yellow in colour.

In one tube it will be seen that there is a crackling and fringed-like appearance, resembling the fronds of a fern. The colonies are soft and semi-liquid, but they do not liquefy gelatine, and, moreover, they are the only colonies which are constant in growth from the mucus of ozæna.

A curious statement is made by Loewenberg in his most recent paper on this subject, to the effect that the cultures of this organism made on gelatine possess a certain odour, but so far from giving forth the peculiar and horrible stench so distinctive of ozæna, the odours liberated from them are of an ethereal character, and have quite unexpectedly been found to be in the majority of cases agreeable. Loewenberg likens them to those of elder flower or of privet. When the microbe is sown on fresh meat, and is further incubated at high temperature, a disagreeable odour, rather of a putrefactive and ammoniacal character than of true ozæna, is manifested.

A definite statement is made by the same observer on a question which will at once suggest itself to us, namely, the relation of the ozæna of atrophic rhinitis, without necrosis, to that of tertiary syphilis of the nose, especially in regard to this organism.

We all recognize the natural odour—so to speak—in these two

conditions as something quite different and distinct, and it is interesting to learn that neither the cultures nor the microscopic characters resemble one another in the two diseases. Certain differences are described between the cultures of the pneumococcus and those of the coccus of ozæna, into which we shall not enter now; further than to say that they are bacteriologically distinct.

When Loewenberg comes to relate the results of his experiments on animals, the proofs of the specific nature of his organism cannot be said to be conclusive. Mice inoculated with the microbe die, even under very small doses, in sometimes less than twenty hours, but not of pneumonia. On the other hand, any attempts to reproduce the disease in animals have so far been entirely unsuccessful.

The cultures Nos. I. to VI. were made from the dry crust; Nos. VII. and VIII. from fresh nasal mucus.

Mr. LENNOX BROWNE next exhibited a set of framed and beautifully executed *coloured drawings* from life, by himself, illustrative of the appearance of the throat in different forms of *diphtheria*, alongside of which were placed the *bacteriological micrograph* in each case. He contested the statement of the bacteriologist that diphtheria was impossible of diagnosis from its clinical aspects alone, and pointed out that although the resources of bacteriology were of the greatest value, there were not very infrequently remarkable discrepancies between the results of bacteriological investigation and clinical examination. The drawings represented cases of *true diphtheria* of the virulent type in which the characteristic bacillus was plentiful, of *complex diphtheria* in which that organism was associated with diplococci, and lastly of *pseudo-diphtheria* in which strepto- and staphylococci were the specific organisms. With reference to the drawing of a case in which œdema was present and which had been diagnosed as one of diphtheria by an expert, Mr. Browne observed that he had thought otherwise on account of that very symptom. Œdema of the uvula and faucial mucous membrane was so rare in true diphtheria as to constitute a diagnostic sign of high value. Another of the great marks of distinction between diphtheria and pseudo-diphtheria was the different character of the secretion. The throat of a diphtheritic patient was not as a rule clogged up with mucus, and in this respect offered a contrast to the throat of scarlatina. Diphtheria gave dry cultures to the bacteriologist; it was a dry disease as observed in the throat. These drawings were destined to be hung up in the Central Throat Hospital.

The PRESIDENT: We are all extremely obliged to Mr. Lennox Browne for bringing these cases before us and for the beautiful drawings.

Dr. HILL: I think Mr. Lennox Browne made a little slip. He said that œdema was never met with in diphtheria cases. He evidently meant to say we do see an œdematous uvula in diphtheria. Of course, an œdematous uvula is one of the characteristics. If you see lacunæ and a very œdematous uvula, especially with a little streak about it, it is very likely to be diphtheria. As a matter of fact, œdema of the uvula, when you have diphtheria of the palate, is a common everyday occurrence.

Mr. LENNOX BROWNE: I am very sorry to differ with Dr. Hill, but

that is just what I did *not* mean. I think by the light of bacteriology we now know that the organisms in an œdematous sore throat are much more likely to be streptococci or staphylococci than the bacilli of diphtheria. I have been seeing during the last five or six months hundreds of cases of diphtheria, and I have taken occasion to point out to those with whom I have seen them that œdema is often to be seen in pseudo-diphtheria cases, but not in those of true diphtheria. I would say further, that I have not seen œdema of the larynx in diphtheritic patients examined *post-mortem*.

Mr. R. LAKE. ***Remarks on Facial Paralysis in Recent Otitis Media; and on the Treatment of Acute Otitis when the Hearing Power is threatened.***

The period at which facial paralysis occurs is very variable, particularly in children. It may be the first symptom of tympanic inflammation, it may precede or accompany pain and external discharge, or it may be a later symptom, and appear a few days or weeks after the onset of otorrhœa. These remarks are illustrated by the following cases:—

1. C. B., aged one and a half years. Pain in left ear for one week, then left facial paralysis was noticed; the pain continued for another seven days, when otorrhœa set in and the child was brought to the hospital.

2. B. C., aged forty. Acute otitis. Otorrhœa and facial paralysis appeared on the same day.

3. A. B., aged four. Influenza. Double profuse otorrhœa; two weeks later, double facial paralysis.

4. G. C., aged forty-seven. Acute otitis media suppurativa for two weeks, and then facial paralysis on same side.

5. L. M., aged seven. Otitis media suppurativa nine weeks; then facial paralysis occurred, and the child was brought to the hospital.

The cases of otitis media in very young children, without involvement of the membrane or external otorrhœa, are by no means rare, and are often associated with retraction of the head, due to pyogenic irritation of the meninges in the posterior fossa. Relief can often be afforded by a free incision of the membrane, combined with hot fomentations, and there are similar cases which, as the late Dr. Hadden pointed out, can be successfully treated by the administration of mercury. The incomplete development of the temporal bone is clearly the cause of the infection of the posterior fossa in early life, and doubtless the incompleteness of the bony canal for the facial nerve explains also the facial palsy which not unfrequently accompanies the otitis media of infants, and the liability to which certainly decreases as age advances.

Even when the aqueduct of Fallopius is complete in infants, the layer of bone is so thin and porous that it is easy to understand how readily pus or muco-pus in the tympanum can involve the nerve and produce paralysis. In reference to this point, it is interesting to note that, at the autopsies of infants, muco-pus is frequently to be seen in their tympana, without having produced any symptoms during life or, at any rate, symptoms definitely referable to the ear.

Palsy of the facial nerve in chronic otorrhœa is well known, but in association with acute disease of the tympanum not much has been written.

Wilde (1853) speaking of acute otitis, remarks :—"Facial paralysis "from the extension of the inflammation to the bony canal in which the "portio-dura nerve passes, sometimes attends otitis. Why the nerve "should be affected in cases of very slight inflammation of the cavitas "tympani and its external membrane, and not in those in which there is "violent otitis extending to the periosteum and mastoid cells, it is "difficult to determine, etc."

"The case of J. Richardson (No. 3), recorded at page 68 of Bell's book, "is evidently one of acute otitis, producing facial paralysis ; Case No. 33 "is of a like nature, etc."

Speaking of Bell's paralysis when attributed to cold :—"It is true if "we carefully examine the records of such cases we shall find dulness of "hearing, tinnitus aurium, and a slight pain in the ear, enumerated among "the symptoms. In my essay on Diseases of the Membrana Tympani, "I stated that I was strongly inclined to think that many of the cases of "paralysis of the seventh pair of nerves, where we have no mechanical "lesion, etc., may have been caused by some form of otitis. It not un-"frequently happens that the inflammation extends to the portio-dura in "the aqueduct of Fallopius, and partial or complete paralysis of that "nerve is the result, which is removed as soon as the inflammation has "wholly subsided."

Politzer : "The inflammation is rarely complicated by facial para-"lysis." And also : "The observations of Wilde, *v.* Tröltsch, Tillmanns, "etc., show that facial paresis sometimes occurs even in cases of simple "non-perforative catarrh."

Grüber (1890, Law's translation) : "It has, however, been settled both "from clinical and from *post-mortem* observations, that such a paralysis "may arise without any osseous affection whatever through a simple serous "or other exudation in the Fallopian canal, or, again, from simple pressure "of an exudation in its tympanic cavity."

Miot and Baratoux (1894) : "And as observed by Toynbee and "Triquet, facial paralysis is produced."

Hovell (1894) : "And in rare cases paralysis of the facial nerve and "neuralgia of the fifth pair have been observed to accompany the "attack."

Some of the reasons why palsy of the facial nerve should be associated with recent otitis media have already been pointed out ; but the pathological mechanism of the involvement of the nerve has been described in different ways by various authors. There can be no doubt that it is due to the spread of an inflammatory process from the tympanum to the facial canal. Wilde and Toynbee's views have already been stated.

Politzer says, with regard to facial palsy occurring in chronic otitis media suppurativa, that "it is due to an extension of the inflammatory process to the Fallopian canal and nerve sheath," and this explanation is no doubt as true in recent otitis cases as in chronic cases.

In respect of the frequency of the onset of facial palsy in recent cases,

I find that it occurred four times in 658 cases of suppurative otitis. These cases were consecutive cases during two years, the total number of ear cases seen during that period being 1250. (St. Thomas's Hospital.)

The methodical and efficient treatment of these cases of acute otitis, complicated with facial palsy, appears to be best conducted in the following way:

In infants—

1. A free incision of the membrana tympani should be made.
2. Antiseptic irrigation should be carried out every six hours.
3. Hot boracic fomentations should be applied every two hours.
4. Some boric acid ointment may be applied to the outer part of the meatus and the pinna to prevent eczema.

In the adult the same treatment should be adopted, but in addition—

5. Two or three leeches should be applied over the mastoid and one over the tragus; and the leeching may be repeated if it appears desirable.

In the adult the *hearing power* is seriously threatened, as well as the possibility of permanent palsy; and to obviate the *loss of the hearing power* (which is a great disaster whether the patient is a child or an adult) as well as to antagonize the chances of permanent palsy, I strongly advocate, if the otitis media acuta is not quickly subdued by leeches, fomentations, etc., the opening of the mastoid antrum (the performance, in fact, of the typical Schwartze operation) so that the antrum, attic and tympanum may be washed out by a strong antiseptic solution, and thus the inflammation be arrested.

One illustration of the value of this operation may be mentioned.

A man, aged forty, came to St. Thomas's Hospital with double very acute otitis media of influenzal origin, and of three days' duration. He had double facial palsy.

On the right side the above operation was done, and he recovered completely both from the deafness and the facial palsy.

On the left side the mastoid was not opened and the tympanum was destroyed. He became permanently deaf on this side, and the palsy too, was not recovered from.

In children, if the discharge is very profuse it is probably best to adopt the same treatment if milder measures fail. If the disease is insidious and the palsy has not lasted too long, the opening of the mastoid is probably the best course to pursue. In one infant of nine months, who had had otitis and palsy for three months, the treatment resulted in the clearing up of the paralysis.

Electrical treatment of the muscles may aid recovery after long neglect, as in the following cases.

O. M. G., aged ten, had been afflicted with left facial paralysis since the age of eight months; the face was not wasted on this side though it was absolutely immobile. The faradic current was useless, but galvanic interruptions of moderate intensity induced contractions in all but two muscles, which required a still more powerful galvanic current. This treatment was commenced in September, 1889, and was completed by

the end of November in the same year, cure being absolute ; the sittings were daily.

A. W., aged twenty-one ; left facial palsy since the age of three years. This case, though never entirely cured, was most wonderfully improved, but here there was some wasting of the soft tissues but none apparently in the bone, which was surprising after eighteen years. Dr. Otway, of Barnes, who carried out the treatment in this case, kindly gave me these details.

It will not be out of place to again urge the advantages obtained in cases of acute otitis media from the irrigation of the tympanal cavities from the antrum. This cannot be done efficiently from the external meatus, and opening of the mastoid is in some cases the only way to *save the hearing*.

Practitioners are alive to the dangers to life incurred by persons suffering from long-standing suppurative otitis media, but there does not seem the same appreciation of the danger to the *hearing power* which an attack of otitis media acuta involves.

I know of many cases following or during the attacks of scarlet fever, measles, or influenza, in which the hearing power has been saved by a timely opening of the mastoid antrum, and in which, if the operation had not been done, the tympana would have been inevitably destroyed.

Think of the child with one ear destroyed by suppuration, with the opposite half of the brain not properly developed, and complete education impossible ; or, still worse, that of the child with both ears destroyed by suppuration, with no hearing power, and in a condition more to be pitied than the one who has facial palsy but yet retains some hearing power. Such considerations appear to point strongly to the surgeon adopting in cases of otitis media acuta (in which the profuseness or infectiveness of the discharge is likely to damage permanently the tympanum) more active measures than have been up to now commonly employed for the arrestment of the tympanal inflammation and the saving from destruction of an essential part of the organ of hearing.

For several of the cases and facts in this paper I wish to say that I am indebted to Mr Ballance.

Mr. DUNDAS GRANT : I should like to express my indebtedness, and I am sure the other members of this society are with me, to Mr. Lake for reading the first otological paper, and one of such very considerable interest.

My experience with regard to the occurrence of facial paralysis in connection with otitis media would certainly not lead me to call it a common complication, and I have been very much on the look-out for it ever since reading a very interesting paper by Gellé upon the subject some years ago, whose experience seems to have been more on a par with that of Mr. Lake, and I think that general physicians, when cases of facial paralysis are brought before their notice, are perhaps not so ready as they ought to be to attribute it to an inflammatory condition of the middle ear. Of course, the occurrence of Bell's paralysis is sufficient to account for disturbances of the hearing of various kinds. In several cases which I have met with in general practice, I was able to note that

the patient had a distinct hyper-sensitiveness to sounds, due, no doubt, to the paralysis of the nerve supplying the stapedius muscle; so that instead of having a deafness, we may actually have a hyper-sensitiveness, and this condition may possibly help to mask the catarrh of the middle ear. But there can be no doubt that the association is a more frequent one than general physicians are apt to allow, and I dare say that a great many of the cases do not come to a special hospital. Perhaps at St. Thomas's some of these facial paralysis cases, I mean those apart from very obvious inflammation of the middle ear, may have come first under the notice of an enlightened physician and then been transferred to the otological department, so that Mr. Lake's experience in that way might be quite easily understood to be very different from mine. I occasionally have cases sent to me at Welbeck Street, but they are usually chronic, and, of course, not considered in the paper at present before us.

With regard to the treatment of acute otitis media in very young patients and infants, I have really very seldom felt any necessity for resorting to extreme measures, as they seem under the simplest possible antiseptic treatment to get well, to a most astonishing extent. Possibly the shortness and relative width of the canal, possibly the greater width of the Eustachian tube, may account for it, but my experience is that these cases run a very satisfactory course as a rule, even under very unsatisfactory social and domestic circumstances. Mr. Lake has most properly dwelt upon the importance of not too great delay in opening the mastoid process in these cases, and I think it cannot be too well understood what a much more simple thing this is than operations upon the mastoid in chronic disease. Politzer has pointed out to us, with much emphasis, just recently, that in the acute cases it is usually the superficial cellular layer of the mastoid which is involved, and all that is required is the opening of the cortex of the mastoid, to allow you to get at the focus of the disease. It is not necessary in these cases to fish deeply for the antrum, which of course even experts will find at times to be not at all a simple procedure, but before proceeding to the opening of the mastoid cell, I have had recourse to a plan which Politzer himself recommends very strongly, and which, in a case published by Mr. Lake himself, was very successful; that is, of washing out the tympanum (perforation having taken place) through the Eustachian tube. In one case under my care the symptoms were extremely severe; the fever was high; the patient had all the symptoms of a commencing meningitis, and I determined to open the mastoid when the recommendation of Politzer occurred to my memory. I washed out the tympanum through the Eustachian tube, with boracic solution, using for the purpose an intra-tympanic tube passed through the ordinary catheter. The fever came down, and the patient presented a different aspect altogether. In a few days, temperature went up again. I washed through the Eustachian tube, and again it came down. This occurred a third time, and after that the recovery was a rapid, continuous, and complete one. However, as I say, it is very different in chronic suppuration of the middle ear, where the superficial cells are often sclerosed, and the antrum itself is buried in a mass of bone which requires, in some cases, a long hour to chisel through. Otherwise

my views are entirely in accordance with those of Mr. Lake, and I have to thank him for bringing the subject before us.

Dr. LAW: I should like to ask Mr. Lake if he can give us any statistics of the facial paralysis cases at Golden Square. I must say that my experience, both in hospital and private practice, is that I have not seen so many cases of facial paralysis as I should have expected. I think these affections are usually treated either by the general practitioner, or by the physician or surgeon, and I think it is quite possible that at St. Thomas's the cases may have been sent over from other clinics, and therefore probably the statistics of facial paralysis, say in six hundred cases at St. Thomas's, would show more instances than amongst a similar number at Golden Square, or in any special hospital.

In reference to the treatment, I would advise that, in acute cases, it should be non-irritative, and as far as possible complete rest with antiphlogistic remedies. I would also say in reference to the remarks passed by Dr. Matheson, that I have rarely met with any great difficulty in making incisions in the tympanic membrane, and I have also seen the membrane incised many times by other individuals, and have never found that they experienced much trouble in performing the operation. Certainly, in some cases, one only sees a drop of blood, but I think this is often because the incision has not been made large enough. A considerable quantity of muco-purulent secretion frequently escapes into the external auditory meatus.

Dr. FARQUHAR MATHESON: I consider Mr. Lake's paper a most valuable one. It treats upon a subject of the greatest importance, but I think if Mr. Lake were to inquire more intimately into the history of these cases, which he calls acute, he would find, as a rule, that they are almost always acute attacks upon a basis of old tympanic or mastoid disease. It is very rarely that one finds facial paralysis in a new case of tympanic disease—in fact, I do not think I have seen any. As to the cause of the facial paralysis, I believe it is due to the formation of pus under the mastoid process pressing upon the facial nerve. I had a case not long ago, a very typical one, in a boy about ten or twelve years of age. He suffered much with headaches and fever; he had some tenderness over the mastoid bone, and my practice is in these cases, when there is a suspicion of mastoid implication, to make an incision of the mastoid process with the view afterwards, if necessary, to open the mastoid antrum. In this case, after passing the knife down well into the lower part of the mastoid process, I came upon matter which looked like pus, and as soon as that was removed the facial paralysis gradually disappeared.

Now, as to the treatment of these cases, I do think it is very rarely necessary to touch the mastoid bone in this form of paralysis or in chronic cases if appropriate treatment is adopted in the early stage. In facial paralysis, after acute otitis media, the great point is to keep the Eustachian tube patent, if possible, and to disinfect the cavity. It is a rather difficult matter to incise successfully the tympanic membrane under such conditions. I hear gentlemen speak of opening the membrane as but a slight procedure, but in practice, in a swollen membrane, when

pus has already formed, it is a difficult matter to know when we actually perforate the membrane, and even when this is done it is seldom so satisfactory as desired. We simply observe the escape of a small drop of blood; rarely have I seen matter follow the opening of the membrane. In the early stage of facial paralysis, if suitable treatment be pursued, it is very rarely that opening the mastoid will be required.

I consider the paper a very interesting one, and thank Mr. Lake for bringing it forward.

Mr. LAKE'S reply: I must thank Dr. Grant for his kind remarks, and also for drawing my attention to Gellé's paper, which had escaped my notice. I should not quite agree with Dr. Grant as to treatment. I must say I rather hold in favour of the treatment that I advocated here. I do not advocate opening the mastoid without due discrimination, but I said it was particularly indicated in cases of infectiveness, or profuse discharge. In the case referred to by Dr. Grant the condition was due to irritation more than to the effect of any ptomaine or leucomaine which was being absorbed by the patient. I do not quite agree with Dr. Matheson in all he said. I think that those cases which he referred to, in which there was pus at the bottom of the fossa, would be more frequently called Bezold's disease of the mastoid, and I think the paralysis is frequently due to the extension of inflammation through the perforation which is so very common in the horizontal portion of the Fallopian canal and which is lucidly alluded to in Dr. Law's translation of Grüber. About statistics, I quite agree with Dr. Law. I was quite astonished myself when I came to work this matter up. I had seen all these cases myself, and the history was very clear that they were instances of acute otitis, but I cannot say in the least whether they were sent from another clinic or not. I would also point out that the cases at St. Thomas's are of a distinctly different social position to those at Golden Square.

Dr. DUNDAS GRANT. *Case of Dysphonia with Paresis of Arytenoid Muscle.*

Miss A. C., aged thirty, head mistress of an elementary school, came under my care in March, 1894, complaining of hoarseness and almost complete loss of voice, worse after slight vocal efforts. This first set in definitely after an attack of "ulcerated throat" in October, 1893, but a year previous she lost her voice for a fortnight owing to an attack of influenza. On examination there was found slight congestion of the vocal cords, and incomplete approximation of the arytenoid cartilage, leaving a triangular opening behind the vocal processes during phonation. The vocal portions were fairly well apposed. There was a slight degree of tumidity of the mucous membrane in the inter-arytenoid space.

There were no evidences of tubercular disease and the family history suggested no direct tendency thereto. Her father and mother were alive. One paternal uncle and a cousin had died from consumption, and another cousin was believed to be suffering with that affection.

After faradization, along with the application of chloride of zinc, the voice at once recovered its strength and retained a fair degree of tone for about a week. This has occurred again and again after each visit to

the hospital, and each time with greater effect as regards strength and duration up till the last visit, about three weeks ago, when the voice was lost after four days.

The patient has been exposed to considerable family trouble, and a decidedly neurotic element is derived from her mother. There is no morning sputum, so that indication and facility for the search of tubercle bacilli have not presented themselves. We are, however, prepared for this should occasion arise.

Mr. MAYO COLLIER: I have had the opportunity of seeing the case exhibited by Dr. Grant, and have done so with considerable interest. They are rare cases, and present a certain degree of trouble in the treatment. I had recently a case under my care, sent to me by Dr. Clayton, of Broadhurst Gardens, with symptoms much the same as those of Dr. Grant's case, though somewhat more exaggerated. There was complete paralysis of the arytenoid muscle, not only transverse, but oblique, and no attempt to adjust the vocal processes. These cases are apparently distressing, because no local application appears to do them any good, and one knows, after reading the history of other cases, that the prognosis is somewhat doubtful, and in many, after trying tonics and change at the seaside, the improvement is but slight. Her employer sent this girl down to Margate for some two or three months, the change resulting in very slight improvement. I had the advantage of the services of a gentleman who was skilled in electrical work, and he applied the continuous current daily to this patient, placing one electrode on the muscles involved and the other on the superior and inferior laryngeal nerves alternately. This treatment, continued every day for the space of a fortnight or three weeks, resulted in marked improvement, so far as the adjustment of the cord and the arytenoid cartilage was concerned, but there was very little improvement in the voice. She could phonate to some extent, but the phonation was not satisfactory. The girl, who came to my house every day for a fortnight, got dissatisfied with the slow progress of her case, and I got dissatisfied with the gratitude of the patient, and so lost sight of her. I have very little doubt that a continuation of treatment for two or three months would have resulted in a complete cure. I heard subsequently that Dr. Clayton had taken the matter in hand, and that she was very much better. I should suggest that in this case faradization, not the interrupted current only, but the continuous current in combination, be applied up to ten milliampères, and I should certainly expect marked improvement. Tonics are indicated, fresh air, absence from work, and correction of any concurrent disease associated with irregular menstruation or uterine affections.

Mr. G. STOKER: I am sure we are all very interested to hear Dr. Grant and Mr. Collier in reference to this case. I am sorry I do not quite agree with all that has been said. In the first place, I do not think these cases are so very rare. This is a case, I take it, of paralysis or, I am more inclined to believe, paresis of the arytenoid muscles. I have found them pretty common, both in hospital and private practice. I think that, in cases of chronic laryngitis of long duration, the muscle which is most often affected, and not uncommonly, is the arytenoid muscle.

I was struck in that case with the peculiarity of the voice, which I thought was not altogether accounted for by the appearance presented, or the want of power which seemed to exist in the arytenoideus muscle; the voice appeared to partake more of the character which we are accustomed to call functional aphonia, that kind of aphonia which occurs in females, and the voice is under those circumstances much improved by the application of the faradaic current. I myself have found that certainly the most satisfactory treatment in these cases was the internal application of and painting the larynx and vocal cords with strong solution of chloride of zinc, thirty grains to the ounce—these are unsatisfactory cases; one may relieve the aphonia, or the dysphonia, but they are very apt to relapse. I hope that will not be so in Dr. Grant's patient.

The PRESIDENT: As regards the question of frequency of occurrence of these cases, my experience coincides with the views expressed by Mr. Stoker. Complete paralysis of the arytenoideus (limited to that muscle alone), and presenting the typical triangular space between the cords in phonation, I should say is, on the other hand, much more exceptional. These other cases of chronic aphonia, in which there is more general paresis, are, I think, not of infrequent occurrence. Varying as they do in their individual features and complications, I think there are no more interesting cases for our consideration. They are essentially of catarrhal origin. In this patient I find considerable congestion, and some swelling still over the arytenoid region. This is in striking contrast to the whiteness of the vocal cords; but there is paresis of the adductors, and the soft whispering voice of functional aphonia. This neurotic complication is apt to be met with. I have seen a good many such instances. In all of these cases we have to deal with those who are subjected to constant strain of their voice, often fatigued and more or less run down in health.

Rest of voice is admittedly of the first importance, together with local treatment to reduce laryngeal congestion. In reference to faradization, I think that, so long as any congestion exists, the advantage to be derived from it is questionable, beneficial as it is at a later period.

Dr. DUNDAS GRANT'S reply: I am very glad to find that my case should have called forth such very interesting remarks, and I was all the more inclined to bring it before the Association on account of the interest that was taken in another, somewhat obscure, nervo-muscular case, that I brought before the Association at the last meeting, when reference was made to the sufferings in regard to the voice experienced by teachers in our schools. This is another teacher, and her experience would go to strengthen the call for public attention being drawn to the difficulties that school teachers undergo. I have not the slightest doubt that this paresis is more or less functional; but it is very difficult to tell where the functional ends, and the paralytic begins. The improvement in the voice which takes place after simple faradization is so extremely remarkable that it can hardly be due to anything else. As regards the question of it arising in laryngitis, there is no doubt that the exciting cause was a catarrhal condition, but that is a very usual thing. Then,

again, the neurotic element is very strongly marked, not merely in the individual, but in her family history.

I shall endeavour to carry out the treatment as recommended, which is, if I may say so, what I have already instituted, only more so. The difficulty I have is that this patient lives in the Midlands, and she is only able to come up at comparatively long intervals. It would be a question as to whether I am justified in recommending her to give up her position as a schoolmistress, and to come up to London and undergo continuous treatment, either at my own hands, or at some more skilled. Any future points in the history I should be glad to bring before the society, because it seems to me a most valuable thing to have repeated observations on the same case at different stages.

Mr. MAYO COLLIER: Mr. President and gentlemen, I have brought three cases up for your inspection to-day, more for the sake of consultation than for giving you an exposition on the nature of their diseases. I venture to say that they are interesting, and my opinion has been confirmed by Mr. Browne, who kindly examined them with me. The first is one where you simply see some elevation in the inter-arytenoid space, some thickening and œdema of the arytenoid cartilages, and some vascularization at the posterior aspect of the vocal cords. This has been going on for twelve months, and no treatment has produced any satisfactory result. The next case is not one of syphilis, but it is a case of a new growth of the pharynx of three months' standing--a very large new growth. The third case is one of dysphagia of two months' standing, and I should be glad of the opinion of the society on its probable cause.

In reference to the case of the old gentleman with the new growth of the pharynx, he is fifty-five years of age, a painter by trade, and he has noticed something wrong with his throat for about six months. He has slight difficulty in swallowing, but has smoked, taken food easily, and worked up to about six weeks ago. He presented himself at the hospital about a fortnight ago, complaining of sore throat. The question resolves itself into, What is this? and the diagnosis lies between syphilis, sarcoma, and epithelioma. Now, with reference to syphilis, I have inquired into his history. There is no evidence of syphilis, there are no old traces of syphilis, nor is syphilis indicated in the appearance of the growth. I should distinctly give it as my opinion that it is not syphilitic. The next question is, Is it epithelioma? I should be inclined to say it is not, because there is no evidence of secondary growths, and there is a total absence of involvement of glands on each side. The patient is in good health, and the growth has not the hardness which one finds in epithelioma. I should say the balance of evidence was in favour of its being sarcomatous. Of course, no treatment is available. I could advise nothing at all, and the man must go from bad to worse. To remove that growth is simply out of the question.

Dr. LAW: I should like to ask Mr. Collier, as operative measures are out of the question, whether he has tried the injection of pyoktanin, and, if not, I would suggest the employment of this remedy. I have tried it in two cases, with slight improvement.

The PRESIDENT: (Mr. Mayo Collier's second case.) I do not think the

appearance is specially characteristic of syphilis. I am inclined to look upon it as malignant; possibly sarcoma. It recalls to me another very interesting case brought before a former meeting by Mr. Collier, involving the same region, the nature of which was at the time obscure, and subsequently proved to be epithelioma. I am sure we shall feel much indebted to Mr. Collier if he would report further upon the present case.

Mr. MAYO COLLIER: The next case is that of a boy, aged nineteen years. For about three or four months he has noticed something the matter with his throat. He has been losing flesh for about twelve months, and not felt up to his work. He presented himself with hoarseness, slight impairment of voice, and posterior laryngitis. There was some swelling of his arytenoids, and there was some accumulation of mucus. I applied chloride of zinc, twenty grains to the ounce, for a time, and after about three months' treatment he got a little better. However, he presented himself again with increased hoarseness. There was then an elevation in the inter-arytenoid fold. Having applied astringents, and given tonics without effect, he simply relapsed month after month, and there is substantially no improvement; on the contrary, he is somewhat worse than when he originally came under my care. Now, under these circumstances, one thought it was not a case of ordinary laryngitis. There is no evidence of tubercle in the lung, and it is doubtful whether we have to deal with an ordinary case of laryngeal catarrh, or commencing laryngeal tuberculosis. The post-nasal catarrh improved with treatment. The improvement of the larynx has not been satisfactory, and I brought him here to-day to endeavour to obtain confirmation of my opinion. I suspected tubercle. This elevation of the arytenoid space, indeed the whole appearance of the posterior aspect of the cords and the general appearance, pointed to a case of early tubercle.

The PRESIDENT asked Mr. Collier whether he had made an examination as to tubercle bacillus.

Mr. MAYO COLLIER: I have not examined for tubercle.

Mr. MAYO COLLIER: (Third case.) This is the case of an old man who has been all over the country acting as umpire at cricket matches. For the last eight weeks he has had great difficulty in swallowing, and the dysphagia is apparently confined to the upper portion of the œsophagus. I saw him swallow, with very great difficulty, some fluid. He takes a very long time in swallowing a tablespoonful of fluid, occupying twenty minutes to half an hour to swallow as little as half a pint, so that his whole day is spent in feeding himself. He complains of difficulty in swallowing; there is no pain, but on examination one finds there is evidently some thickening of the posterior arytenoid aspect and swelling of the upper portion of the œsophagus. There is an elevation in the pyriform fossa which, to my mind, looks very much like a growth. This is about a month ago. I put him on iodide of potassium and bromide, and he has improved. I examined his chest cavity very carefully, and I could find nothing to assist one in the diagnosis there, and I examined his liver, because one knows there are several cases on record where dysphagia has been due to liver disease, but there was no evidence of such in this case. However, judging from recent examinations, there is

very little doubt that there is a growth there—probably commencing epithelioma in the hyoid fossa—which sets up this trouble. I should say the man's prognosis is very bad. There was distinct tenderness on the left side, just opposite the cricoid cartilage, but this and the fulness have disappeared under treatment with iodide of potassium. I tried to pass a bougie, but I could not get the smallest bougie down. There was complete obstruction, apparently spasmodic, directly the bougie came to the top of the œsophagus.

Dr. FARQUHAR MATHESON: Looking at the throat in this case, I notice that the tonsils are very large, and I should say that syphilis had been contracted at an earlier period of this man's history. There is no question that it is a new growth, evidently of a sarcomatous nature. I believe if Mr. Collier will inquire further, that he will find syphilitic affection in former days. It would be interesting if he would report at some future meeting of the society the development of the case and the procedure he adopts.

Dr. LAW: I should like to ask Mr. Collier whether the patient is an alcoholic subject. I am thinking of the possibility—certainly from the laryngoscopic image there is only a slight swelling to be seen on the right side—of the trouble being due to spasm.

The PRESIDENT: The case looks to me like one of epithelioma of the œsophagus. I should say possibly the more acute swelling referred to, which occurred on the left side of the cricoid cartilage, and subsided under iodide of potassium, may have been due to acute inflammation with enlargement of the glands of the laryngo-tracheal.

Dr. EDWARD LAW. *Case of Double Antral Disease.*

S. W., aged forty-two years, fireman, was sent to my hospital clinic last December complaining of a slightly fœtid discharge from both nostrils and a feeling of general discomfort about the root of the nose and in the malar regions. The symptoms were stated to be aggravated and sometimes accompanied by neuralgic pains after exposure to cold and wet. He believed that for several years he had received relief by syringing out daily both antral cavities, with a weak carbolic solution, through apertures in the alveolar ridge on the right and left side of the mouth.

The patient, who was evidently much depressed and very sensitive about his condition, related the following history:—When twelve years of age he injured his nose through a fall. The swelling gradually disappeared in a week or ten days, and afterwards gave him no further trouble. Five years ago last September he suffered from a dull aching pain (not toothache) with swelling and tenderness of the right side of the face. He went to the Dental Hospital and had a sound tooth extracted without relief; three days later a second molar tooth (also sound) was extracted on the same side, and a perforation made through the socket into the right antrum. The evacuation of a quantity of pus followed this operative procedure. The patient attended daily at the Dental Hospital for six months, and was then taught to use the syringe himself. The discharge of muco-pus has never ceased, and he has regularly continued to

irrigate the antral cavity several times daily. Whilst attending the Dental Hospital he was sent to Golden Square, and a polypus was removed from the right nostril.

There is no history of carious teeth and the abscess was supposed to be possibly due to a blow, cold, or venereal disease. I may here mention that the patient states that "a new tooth has come through behind the one removed."

Twelve months later, in 1892, very similar symptoms occurred on the left side, without apparent cause, and the patient had a sound tooth extracted at Guy's Hospital, and an opening made through the alveolar socket into the left antrum. A large quantity of pus is reported to have escaped through the puncture.

The patient has constantly irrigated both antra through the mouth for the last three years, and the solution injected has always brought away a variable quantity of cloudy, flocculent discharge from the nostril of the respective sides.

At his visit there was no pain or tenderness on distension, and on examination of the anterior nares I could discover nothing except general congestion of the nasal mucous membrane; a little muco-purulent discharge, with no offensive odour and not particularly abundant, about the middle meatus; swelling of the anterior extremity of the right inferior turbinate and slight polypoid proliferation of the right middle turbinate. Transillumination gave no satisfactory assistance.

I applied a little chromic acid to the right middle turbinated body, and came to the conclusion from the long duration of his trouble and trivial objective symptoms that his condition was greatly aggravated, if not entirely kept up, by excessive treatment, in the way of too frequent irrigations. I advised him to inject a little warm Sanitas solution night and morning through both antral cavities, and to gradually give up this method of treatment. At first I found him very nervous and obstinate, but, by permitting him to sniff a little warm salt and water through his nostrils, I have persuaded him to use his ball-syringe less frequently. To-day he has used it before you, after an interval of seventeen days, the solution coming out quite clear from the right nostril, and only bringing about half a teaspoonful of non-odorous discharge from the left antrum.

I think the case is interesting, as a bilateral affection, from the history and from the duration of treatment. I should like to ask the members of the society if any steps should be taken to close the apertures in the alveolar ridge, and so prevent the possible entrance of particles of food and micro-organisms from the mouth. Personally, I do not think that any more serious surgical interference is desirable, as the patient is quite able to follow his employment.

Dr. FARQUHAR MATHESON: It has fallen to my lot to see, I think, this week three cases of this malady. Two of the cases were operated upon, one at the Dental Hospital. The usual tube has been passed to the antrum through the alveolus. The other, a lady, who had also been operated upon some years ago. The third case was that of a gentleman, who had consulted me, some three or four years ago, with the same condition, and I recommended him to submit to an operation of this kind.

He declined. I have seen him again this week, and of the three I think the one left alone is the best. He has occasional seizures of inflammation in the antrum; the pain continues for two or three days. The pus discharges itself, and, after using boracic acid lotion for a few days, he is perfectly well and free from any inflammation for a considerable time. The other case that was operated upon at the Dental Hospital came to me the other day complaining of severe pain in the cheek bone and over the nose and eyes. No doubt there was inflammation in the antrum, and daily syringing through the alveolar opening has to be performed. I do not know that any benefit resulted from opening the antrum at all.

Of all the cases that I have seen of this nature, I must say that little good resulted from operation, and that, as a rule, they do as well by local treatment, viz, the nasal douche and fomentations to the nose, as by being surgically interfered with. Generally, in those cases of maxillary abscess, the region of the pain is, I believe, in the nostril, and, as a rule, you will find considerable enlargement of the middle turbinated bodies, and, if this condition is treated appropriately and efficiently, one will get all the benefit that can be expected from operations. There are fashions in everything, and there is fashion, I think, frequently in operations. The accessory cavities have come into fashion lately in the same way as mastoid incisions.

Mr. MAYO COLLIER: We are indebted to Dr. Law for bringing this case before us. I should say my experience coincides somewhat with his. Dr. Law has shown the case in order to get our opinions as to whether any surgical procedure shall be adopted; and whether he should attempt to close the antrum.

I am strongly of opinion, seeing that the right antrum is, practically speaking, well—there is no discharge, the antrum is returning to a healthy state, for it has not only one opening into the air, but it has apparently two, it plainly communicates with the nasal cavity, and for seventeen days there has been no secretion—that there is no reason why the opening in the alveolus should be closed. I should advise that no more syringing be resorted to, and I should expect that in the course of a month the opening will heal up. I should put a little plug into the alveolus, a small piece of iodoform wool, just sufficiently large to prevent decomposing particles of food getting into the antrum. With regard to the left side, were the patient a man of position and the trouble had considerable mental effect upon him, I should say open the antrum and see what is necessary to be done. Probably there might be granulation tissue there; but, under the circumstances, my advice is, do not touch it. If he were a man of position and suffered much inconvenience, I should say do not resort to any pettifogging treatment, but have a good look in, put a small trephine in the canine fossa, and then treat it definitely. The result will be satisfactory. It is exactly the same in those frontal cases. You may go on syringing them out month after month and year after year, when a little operation of ten minutes would have let you see the whole trouble. In this case, in addition to the plug, I would advise that the left side be syringed out regularly twice a week with chloride of zinc, four or five grains to the ounce, and probably the wound will

heal up. From the history of the case and its long duration, I think there is not very much the matter.

Dr. LAW: I should like, sir, to say, in reference to the remarks made by Dr. Matheson in connection with operations on the antrum, that this man five years ago suffered the most acute pain. He went to the Dental Hospital and had two teeth extracted and attended daily afterwards for six or seven months; two years later similar symptoms occurred on the right side. They were so severe that the man, in spite of his previous experience, went to Guy's Hospital and had a similar operation performed on the right side and gained great relief. In reference to the future treatment of the case, I quite agree with the remarks which Mr. Collier has kindly made, and perhaps on some other occasion I shall have the opportunity of bringing the patient again before the society. What I was most anxious to obtain was an opinion as to the desirability of closing the apertures leading from the mouth into the antral cavities, particularly the opening on the right side, in order to prevent the entrance of particles of food, microbes, or other foreign material.

Dr. PEGLER exhibited, under the microscopes, a series of sections illustrating the morbid histology of turbinal hypertrophies. Owing to the lateness of the hour, he deferred his paper on the subject to a future meeting.

Witherby & Co., Printers, 326, High Holborn, W.C.

TRANSACTIONS

OF

THE BRITISH LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL ASSOCIATION.

DURING THE YEAR 1895.

LONDON:
THE REBMAN PUBLISHING COMPANY, LIMITED,
SUCCESSORS TO F. J. REBMAN,
11, ADAM STREET, STRAND.

1895.

TRANSACTIONS

OF THE

BRITISH LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL ASSOCIATION.

SEVENTH ANNUAL SUMMER MEETING,

JULY 25TH AND 26TH, 1895.

President.

Dr. W. McNEILL WHISTLER (London).

Vice-Presidents.

Dr. ED. WOAKES (London). Dr. R. A. HAYES (Dublin).
Mr. MAYO COLLIER (London).

Council.

Dr. ED. LAW.
Dr. DUNDAS GRANT.
Dr. BARCLAY BARON (Bristol).
Dr. FARQUHAR MATHESON.
Dr. R. NORRIS WOLFENDEN.
Mr. F. MARSH (Birmingham).

Secretaries.

Dr. HEMINGTON PEGLER. Mr. RICHARD LAKE.

LONDON:
THE REBMAN PUBLISHING COMPANY, LIMITED,
SUCCESSORS TO F. J. REBMAN,
11, ADAM STREET, STRAND.

1895.

LIST OF FELLOWS.

JULY, 1895.

ABERCROMBIE, P. H., 10, Coburg Place, Bayswater, London, W.
ANDERSON, W. M. ABBOT, 10, Old Cavendish Street, London, W.
BARON, BARCLAY J., 16, Whiteladies Road, Clifton, Bristol.
BERKLEY, E. J. GIBSON, 105, Camberwell Road, London, S.E.
BRONNER, ADOLPH, 33, Manor Road, Bradford.
BROWN, C. H. GAGE, 74, Cadogan Place, London, S.W.
BROWNE, LENNOX, 15, Mansfield Street, Portland Place, London, W.
BROWNE, WALTON, 10, College Square, Belfast.
BARK, JOHN, 54, Rodney Street, Liverpool.
BALL, ED., 2, Part Street, Southport.
CAMPBELL, HARRY, 20, Devonshire Street, London, W.
COALL, R. H., 44, Bedford Square, London, W.C.
COLLIER, MAYO, 133, Harley Street, London, W.
COUSINS, WARD, Riversdale, Kent Road, Southsea.
COLLIER, N. C., 10, West Kensington Gardens, London, W.
CURTIS, HOLBROOK, 118, Madison Avenue, New York, U.S.A.
DAVISON, JAMES, Streate Place, Bath Road, Bournemouth.
DUNCANSON, K., 22, Drumsheugh Gardens, Edinburgh.
DRINKWATER, H., Grosvenor Lodge, Wrexham.
EWING, F. C., 305, North Grand Avenue, St. Louis, U.S.A.
ELLIS, RICHARD, 100, Rye Hill, Newcastle-on-Tyne.
FULLERTON, ROBERT, 24, Newton Place, Glasgow.
GRANT, J. DUNDAS, 8, Upper Wimpole Street, London, W.
HAYES, R. A., 82, Merrion Square South, Dublin.
HERRICK, R. W., 17, Castle Street, Nottingham.
HERSHELL, G., 25, Queen Anne Street, London, W.
HILL, WILLIAM, 24, Wimpole Street, London, W.
HODGKINSON, A., 18, John Street, Manchester.
HODSON, ALGERNON H., 23, Brunswick Street, Brighton.
HOLMES, GORDON, 10, Finsbury Square, London, E.C.
HOLLOWAY, GEORGE, 11, Somerset Street, London, W.
HOUGHTON, M. J., Radford House, Weston-super-Mare.
HUNT, MIDDLEMASS, 55, Rodney Street, Liverpool.
HEWETSON, H. B., 11, Hanover Square, Leeds.
HILLIS, JOHN, 138, Leinster Road, Dublin.
HUTCHINSON, A., 225, Bath Street, Glasgow.
JONES, T. CARMALT, Abchurch House, Sherborne Lane, London, E.C.
JAMES, W. CULVER, 15, Marloes Road, Kensington, London, W.
JAKINS, PERCY, 120, Harley Street, London, W.
LAKE, RICHARD, 19, Harley Street, London, W.

LAW, ED., 35, Harley Street, London, W.
LODGE, SAMUEL, 13, Manningham Lane, Bradford.
MACDONALD, GREVILLE, 85, Harley Street, London, W.
MACINTYRE, JOHN, 179, Bath Street, Glasgow.
MACKENZIE, G. HUNTER, 22, Heriot Row, Edinburgh.
MARSH, FRANK, 34, Paradise Street, Birmingham.
MATHESON, FARQUHAR, 11, Soho Square, London, W.
MILLIGAN, W., 337, Oxford Road, Manchester.
MCGILLYCUDDY, W., Pendennis, Derby Road, Bournemouth.
ORWIN, ARTHUR, 15, Weymouth Street, London, W.
ORR, J. O., 337, Jarvis Street, Toronto.
PEGLER, L. H. (*Hon. Sec.*), 12, Radnor Place, London. W.
ROBERTSON, W., 17, Osborne Road, Newcastle-on-Tyne.
REID, ST. G., Thornton Heath, Croydon.
SANDFORD, A., 13, St. Patrick's Place, Cork.
SCATLIFF, J. M. E., 11, Charlotte Street, Brighton.
SEWILL, J. SEFTON, 9A, Cavendish Square, London, W.
SPICER, FREDERICK, 282, Camden Road, London, N.W.
SMYLY, SIR PHILIP C., 4, Merrion Square, Dublin.
STOKER, G., 14, Hertford Street, Mayfair, London, W.
STONE, GEORGE, 88, Rodney Street, Liverpool.
SNOW, W. V., 2, Richmond Gardens, Bournemouth.
SCOTT, W. G., Onehunga, New Zealand.
SMITH, F. A. A., Portland House, Cheltenham.
TAYLOR, S. JOHNSON, 44, Prince of Wales Road, Norwich.
VINRACE, DENNIS, 24, Alexander Square, London, S.W.
VICARS, FREDERICK, 38, Brompton Crescent, London, S.W.
WAGGETT, E. B., 66, Park Street, London, W.
WALKER, C. R., Gainsborough House, Leytonstone.
WARDEN, CHARLES, 43, Newhall Street, Birmingham.
WHISTLER, W. MCNEILL, 17, Wimpole Street, London, W.
WILKIN, G. C., 39, Weymouth Street, London, W.
WILLIAMS, P. WATSON, 2, Lansdown Place, Clifton, Bristol.
WILSON, JAMES, 52, Rodney Street, Liverpool.
WILSON, W. WRIGHT, 35, Edmund Street, Birmingham.
WINGRAVE, WYATT V. H., 7, Taviton Street, London, W.C.
WOAKES, CLAUDE, 78, Harley Street, London, W.
WOAKES, ED., 78, Harley Street, London, W.
WOLFENDEN, R. NORRIS, 19, Harley Street, London, W.

HONORARY FELLOWS.

BOSWORTH, FRANCKE H., New York.
COHEN, SOLIS, Philadelphia, U.S.A.
FAUVEL, CHARLES, Paris.
MASSEI, PROF., Naples.
SCHROETTER, PROF. VON, Vienna.

THE

BRITISH LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL ASSOCIATION.

THE SEVENTH ANNUAL SUMMER MEETING,

July 25th and 26th, 1895.

Dr. W. McNEILL WHISTLER, *President*.

GENERAL BUSINESS.

Two motions were brought forward—

1. That of Dr. MACINTYRE: That an additional Secretary be appointed.
2. That of the PRESIDENT: That a Treasurer be appointed.

Dr. MACINTYRE said he was sorry that owing to a number of causes he had not been able to bring his motion before an earlier meeting of the Association, as he had intended to have done. He had had considerable experience with the management of an association, and a good deal to do with the reporting work. From his experience of secretarial work he thought it would be a very wise arrangement to have two Secretaries, one to look after the general business of the Association, and the other the reporting.

Mr. LENNOX BROWNE seconded, and suggested that the difficulty in the way of definite election at this meeting might be got over by appointing a Secretary *pro tem.*, and leaving it to the Council to confirm or to bring forward another name for election at the next meeting. He would propose that Mr. Lake be appointed *pro tem.*

Dr. LAW said he had much pleasure in agreeing with Mr. Browne's proposal, and seconding the temporary nomination of Mr. Lake.

Carried unanimously.

The PRESIDENT suggested that the previous motion did not imply that the Secretary should be also a financial Secretary, and he therefore thought that the office of Treasurer should be instituted.

Mr. LENNOX BROWNE thought this would have to be left for another year, as the Secretary's work would be lightened by having another Secretary. He thought that the question of appointing a Treasurer should be discussed at a Council Meeting, and wait for ballot till next year.

Dr. LAW thought it might be decided that the Association should have a Treasurer, though perhaps election might be postponed.

Dr. STOKER thought that as notice had been given of this motion, it would be quite in order to alter the laws, thus authorizing the Council to nominate someone who would be balloted for at the next General Meeting.

The PRESIDENT said his feeling, after much experience in secretaria work, was that the financial part of the work should be undertaken by a specially appointed Treasurer.

Mr. LENNOX BROWNE agreed, but suggested that the name be submitted for ballot at the next meeting.

Dr. STOKER said he would have much pleasure in nominating Dr. Wolfenden.

Dr. MATHESON thought it would be better to leave the nomination to Council.

Mr. LENNOX BROWNE reminded the President that officers had always been nominated by Council.

The PRESIDENT said that this rule must be followed.

It was finally agreed to leave the election of Treasurer till the next General Meeting.

ELECTION OF OFFICERS: 1895-6.

President:

Dr. GEO. STOKER (London).

Vice-Presidents:

Dr. EDWARD LAW. Dr. MIDDLEMASS HUNT. Dr. WILLIAM MILLIGAN.

Council:

Dr. W. MCNEILL WHISTLER (*Ex-officio*).

Metropolitan -
- Dr. DUNDAS GRANT.
- Mr. MAYO COLLIER.
- Mr. WYATT WINGRAVE.
- Mr. G. C. WILKIN.

Extra Metropolitan
- Dr. J. M. E. SCATLIFF (Brighton).
- Mr. JOHN BARK (Liverpool).

Hon. Sec.:

Dr. HEMINGTON PEGLER.

RECEPTION OF VISITORS.

Dr. W. H. DALY, President American Laryngological Association.

Dr. J. N. MACKENZIE.	Dr. SAJOUS.	Dr. E. BOSQUET.
Dr. GLEITSMANN.	Dr. THEODOR HERYNG.	Dr. FRED LEWIS.
Dr. F. H. BOSWORTH.	Dr. H. KRAUSE.	Dr. P. COOTE.
Dr. F. DE ROALDES.	Dr. NATIER.	Dr. G. SIMS WOODHEAD.
Dr. SHOEMAKER.	Dr. LUC.	Mr. SYDNEY JONES.
Dr. COAKLEY.	Dr. POSTHUMUS MEYJES.	Dr. CAMPBELL SMITH.
Dr. J. H. BRYAN.	Dr. KIMBALL.	&c. &c. &c.

A telegram was received from Professor GRAZZI, Florence, inviting the Association to the Otological Congress at Florence, in September following.

Letters regretting their inability to attend were received from Dr. FELIX SÉMON, Sir PHILIP SMYLY, Dr. HUNTER MACKENZIE, Dr. R. A. HAYES, Professor SCHROETTER, Dr. LEFFERTS, Dr. BEVERLEY ROBINSON, Professor FRAENKEL, Professor GRUNWALD, and others.

CASES EXHIBITED.

A Case of Successful Excision of Half of the Larynx for Cancer.

Mr. ROBERT H. WOODS (Dublin) exhibited a man, aged thirty-two, from whom he excised the right half of the larynx from the great cornu hyoid bone to the arytenoid cartilage inclusive, for cancer. The operation was performed on April 1st, and the patient made an uninterrupted recovery. The glands covering the internal jugular vein and those lying under the angle of the jaw were secondarily involved and removed. The patient, on the twenty-eighth day after the operation, was able to swallow milk; he is quite comfortable, has a fair voice, and there is no appearance of recurrence. The tumour on section was found to be a squamous epithelioma and apparently sprung from the right ary-epiglottic fold. About three-fourths of the lumen of the larynx was taken away and the cicatrix resulting is being treated by dilation with Schroetter's tubes.

A Case of Successful Extirpation of the Whole of the Larynx for Cancer—Preservation of Speaking Voice.

Dr. DELAVAN showed a patient operated on three and a half years ago by Dr. J. Solis-Cohen, of Philadelphia, for adeno-carcinoma of the larynx. Total extirpation of the larynx was performed, including the first ring of the trachea, and the far end of the trachea was attached to the wound in the neck, thus cutting off absolutely the pharynx from all communication with the lung. There are several particulars with regard to the operation with which I will not detain you. I simply wish to say the patient recovered brilliantly and that he is now well. That this operation is distinctly an improvement upon the older methods is evidenced in this case. Among other things, the man can speak and swallow without artificial aid of any kind. [The man then spoke from the end of the room, explaining how he came to England and then repeated the numerals from one to ten, all of which were perfectly audible.]

The PRESIDENT showed—

1. *A Case of Cured Laryngeal Tuberculosis, of fifteen years' duration.*
2. *A Case of Tracheal Web.*

A demonstration was made of—

1. *Coloured Plastic Models of interesting Diseases of the Larynx* (from the Pathologico-Anatomical Institute of the Königliche Charité zu Berlin; Director: Prof. RUDOLF VIRCHOW), prepared by Dr. PAUL BERLINER (Berlin).

2. *A Phantom of Diseases of the Larynx for diagnostic use, and the teaching of operative technique.* By Dr. PAUL BERLINER (Berlin).

These were exhibited by Dr. THEODOR HERYNG for Dr. BERLINER. The plastic models were of exceptional beauty. They received the Gold Medal at Chicago in 1893, and a Silver Medal at the International Medical Congress in Rome, 1894.

PRESIDENT'S ADDRESS.

Gentlemen,—It is my first and most pleasing privilege to greet, with warmest welcome—on behalf of the Fellows of the Association—our honoured guests.

To the Fellows of the American Laryngological Association, who, as delegates from that eminent, and I would add pioneer Society, have crossed the ocean to join in our meeting ; to our distinguished colleagues from the Continent ; and to all who, in response to our invitation, have graciously accepted to take part in our discussions, I desire to express our heartfelt appreciation of the distinction they confer upon us.

We are indebted to one and all for the great pleasure they accord to us by their presence at this our seventh summer meeting.

Of all the annual gatherings of the British Medical Association, the one held in Dublin, eight years ago, will, I am sure, be specially remembered by many, as there, for the first time, among the different sections, a separate place was assigned to our department ; and that the sub-section then established gave origin to the British Laryngological Association.

The founding of this society was the first opportunity afforded us in this country of frequent and more special conference together, that each might benefit by the experience of his fellows ; that open and unprejudiced discussion might test the worth of many theories ; and that each might thus have readier means of adding still more to the important work—already then on record.

Above all, it was the firm foundation of that friendly intercourse, that bond of union and good fellowship, which, advancing our common aim, is now one of the greatest sources of enjoyment to us in our conferences.

I hope that no spirit of egotism may be attributed to me if, in my gratification at the result obtained, I speak of the pleasure I feel that it fell to my lot to give utterance, in my address in Dublin, to the wish I felt that this measure be no longer delayed. The ready response that the proposal met with did away with all doubt as to the views of the majority. The full realization of the hope then expressed is to-day a just source of pride to those of the original members to whom the furtherance of the undertaking was entrusted ; and to all who, by the work they have done, have promoted its success.

Dr. Hayes, the secretary of the section, Dr. Stoker, and Mr. Lennox Browne, with whom, as chairman, I was associated, formed the com mittee appointed by the meeting to carry out the preliminary work of organization ; and to this number were added Dr. Macintyre and Dr. Hunter Mackenzie. The work involved was not light, and upon Dr. Hayes especially the burden of much correspondence was heavily laid. The result to us, though, was most gratifying when, at the preliminary meeting held the following spring in London, at the rooms of the Medical Society—which meeting was convened to receive the report of the Dublin committee—the hon. secretary, Dr. Hayes, returned a list of over fifty applicants for membership, in answer to the circular that had been

issued to all who were interested in the diseases that are our special study. This list included the names of almost all those prominent in our specialty at that time.

On this occasion—at which I had the honour to preside—there were present, among many others: Dr. Hunter Mackenzie, of Edinburgh; Dr. Macintyre, of Glasgow; Dr. Prosser James; Mr. Lennox Browne; Mr. Cresswell Baber; Dr. Whipham; Dr. Woakes; Dr. Dundas Grant; Dr. Orwin; Dr. Greville Macdonald; and Dr. Stoker; and the resolution there brought forward, "That the British Laryngological and Rhinological Association be now declared established," was unanimously carried.

Among the first to place his name on the roll of original members was Sir Morell Mackenzie, the first President of the Association.

In his inaugural address—most brilliant in argument, most perfect in diction—he welcomed the establishment of the society as marking a distinct epoch in the progress of our specialty; and, rebutting futile theories that had been advanced opposing its foundation, bade God-speed to the work.

I must not encroach upon the time at our disposal now, by alluding in detail to the work done since then. In looking, though, to the list of papers that have been read at the several meetings, and the many interesting cases that we have had the privilege of observing, one cannot help being impressed by the comprehensiveness of the field that has been traversed, and the importance of the discussions to which they have given rise.

It happens that our July meeting this year brings us again in close relation with the British Medical Association, about to hold its session in London; and it is surely a fitting moment to recall the bright cheer we met with at that meeting in Ireland, when, in the halls of Trinity College and under the auspices of the British Medical Association, this, the original Laryngological Society of England, was inaugurated.

The harmony of work between the two since then, the never-flagging interest that has been maintained in the special section of the British Medical Association, the contributions of the Fellows of this society to each of those annual meetings, and the sustained interest of the work there done, is proof that the fears expressed by some at the beginning, that the work of the one would hinder that of the other, were groundless; while the records of our meetings here bear evidence, I think, of the wisdom of the undertaking, and the good thereby achieved.

When all work together, availing themselves of every opportunity afforded, no harm can befall the work. Of this we have additional evidence since the establishment of the more recent special body, the Laryngological Society of London. In this vast Metropolis alone there may be room for more than one centre of observation, and we do not seek to contest the benefits to be derived from all.

Yet we cherish the British Laryngological Association with special affection. If we love not Cæsar less but Rome more, still no spirit of contentious rivalry with our fellows can be set down to us.

In face of the work before us, I must, though, detain you no longer.

To the Fellows of the Association I would say only these few more words: If, when I last addressed you on taking the presidential chair, I found it difficult to express in adequate terms all that I felt in recognition of the high honour you had bestowed upon me, now that my term of office is drawing to a close I find myself still more sorely in need of words to tender, as fully as I would wish to do, my deep gratitude to all for their ever-ready support. To you I owe all thanks for your valuable co-operation, and your important contributions during the past year.

To those who have borne office with me, the vice-presidents and members of the Council; to the hon. secretary, Dr. Pegler, and to Mr. Lake, I am personally most deeply indebted. I cannot thank my colleagues sufficiently for their untiring devotion to the work they have been called upon to meet during my term of office, and for the great benefit I have derived from their advice.

The little that I may have been enabled to do to maintain the standard of my predecessors I owe to the kind aid I have received from all.

DISCUSSION ON THE SURGICAL TREATMENT OF THE ACCESSORY CAVITIES OF THE NOSE.

Dr. JOHN N. MACKENZIE (Baltimore). Mr. President and Gentlemen,—When some months ago I received from the President and Council of your honourable body the courteous invitation to open this debate, it did not occur to me at the time that I had little, if indeed anything, novel to add to the already rich and voluminous literature on the subject. Rich, however, as this literature is, and often as the subject has been dragged into debate, there are still points which remain unsettled—questions which are still unanswered, and which come within the pale of reasonable controversy. It is to a few of these points that I wish to direct attention this morning, and I will preface what I have to say by the observation that I do not propose to bring under consideration anything very startlingly original or novel, but I simply wish to precipitate and stimulate debate. On looking over the slips which your honorary secretary has kindly prepared, I find that the distinguished gentlemen who are to follow me will occupy their time chiefly with the frontal and ethmoidal sinuses, and in order to avoid unnecessary repetition, and in order not to prolong the discussion beyond reasonable limits, I shall confine my remarks to the surgical treatment of the diseased antrum maxillare, the most generally interesting of all the nasal accessory cavities.

The chief interest in the surgery of the antrum, as, of course, in the case of the other sinuses, is the manner of reaching its interior, and discussion of this question involves inquiry into the most convenient and satisfactory avenues by which to approach the sinuses from without. There are two avenues of approach to the maxillary sinus—the nasal passages and the mouth; and as considerable diversity of opinion still exists as to the choice of point of entrance, it may be well to review very briefly the chief openings which are employed in this class of case at the present day.

At the outset the question seems perfectly natural, Why not enter through the aperture which nature has already provided—the ostium maxillare—with or without enlargement of its normal size? While in some cases such a procedure is not difficult of attainment, in many others—and these constitute the vast majority—the foramen is inaccessible, or, if accessible, its entrance is effected only with considerable pain, and with possible injury to the floor of the orbit. Not infrequently, too, the natural orifice is abnormally situated, and great harm may be done by incautious attempts at penetration.

In cases in which the naso-antral opening is not readily accessible it has been proposed to remove the entire middle turbinated body, or its anterior portion. This operation, in my judgment, would only be justifiable in cases in which there was associated disease of the ethmoid, and here, too, it would be chiefly useful as a means of reaching the cells of that bone. In simple uncomplicated antral disease it is preposterous.

When, then, in addition to the inaccessibility of the naso-antral openings, the discomfort to the patient—not only in the penetration of the sinus, but also in the subsequent syringing—is taken into consideration, I think we may lay it down as a safe rule of practice that this operation should only be undertaken when other methods are contra-indicated, or in cases in which, from extensive loss from disease or congenital absence of portions of the intra-nasal framework, this opening is readily accessible.

The method of opening the maxillary sinus through the inferior meatus owes its popularity to the advocacy of Mickulicz, who opens the cavity below the ostium maxillare and close to the floor of the inferior meatus. The same objection of inaccessibility of the point of puncture obtains here as in the case of penetration through the normal opening. The antral wall is sometimes very dense at this point, causing difficulty of penetration and great pain, and, as the nasal wall at this situation is very vascular, the operation is not infrequently attended by severe hæmorrhage.

A decided improvement on the operation of Mickulicz has been brought forward by my distinguished friend Dr. Krause, of Berlin. In his method, as I understand it, there is not only one operation, but, after several punctures, it has to be reopened at several sittings, and the patient cannot clean out the cavity. These objections seem to me to have been recently overcome to a large extent by Dr. Walter J. Freeman, of Philadelphia. He, like Krause and Mickulicz, enters the antrum close to its floor, but more anteriorly, just below the nasal duct. The antrum is very thin at this point, and the instrument goes through very readily, and, by means of an appliance which I shall show later on, the patient can easily syringe the cavity out. This instrument consists of an ordinary trocar and canula; the trocar is much longer than the canula, in order to facilitate removal of the latter. The instrument is introduced low down in the inferior meatus anteriorly at a point below the nasal duct, as near as possible to the vestibule of the nose, and, with a few taps of the mallet it readily penetrates the sinus. The trocar is then withdrawn, and it is seen whether pus or any other fluid follows the

puncture. After having determined the presence or absence of pus—assuming that pus be present—the canula is re-introduced, the nuts are screwed off, and the instrument left *in situ*. The cavity can be syringed out either by means of a second tube, which fits exactly into the primary tube, with a small rubber syringe, or, what is better, a small rubber tube, which accurately fits into the canula, can be attached and syringed out by the surgeon or the patient himself.

I think this method possesses many advantages over any other previously described. Dr. Freeman has had excellent results with it.

The leading objections to intra-nasal operation are, first, the frequent inaccessibility of the point of puncture. This is true not only of the middle but of the inferior meatus. When, for example, the inferior turbinated bone is "depressed," and especially in a narrow nostril, there is little, and sometimes no room beneath the bone in which to manipulate the instruments. Preliminary removal of the inferior turbinated body would scarcely be justified in the presence of other and easier methods of procedure. In the second place, except in the case of Freeman's method, the patients are unable to attend personally to the cleansing of the cavity—a very decided objection. In the third place, the sphere of usefulness of these operations is limited. They are excluded in the case of growths and foreign bodies, and in that large class of old suppurative catarrhs, that have to be dealt with in a thoroughgoing, vigorous manner, and of which I shall speak later on. In the fourth place, the pain attending the operation and the subsequent syringing is greater than that experienced in some of the mouth operations which easily take its place. In the fifth place, it may happen that after having performed the intra-nasal operation conditions may be found that necessitate a second and more radical operation through the mouth, thus subjecting the patient to two operations. This is by no means a fanciful objection. In the sixth place, I do not believe that as good drainage, or rather cleansing, can be secured by any of the intra-nasal methods as in the case of the mouth operations. Even when the antrum is entered near the floor, there is always some running pus after syringing, as is admitted by Freeman, who on that account cautions against the use of hydrogen dioxide on the ground that the pressure from the liberated oxygen, except with a very weak solution, gives rise to pain.

I do not by any means wish to depreciate the value of intra-nasal surgery in this class of case. It is often invaluable, especially as an aid to diagnosis. It may also be useful in cases in which the antrum maxillare is absent or occluded.

In the mouth, on the other hand, we have a larger field of operation and a far greater choice of points of puncture. The antrum may be entered through almost any point along the alveolus, either through or between the teeth, or above the teeth, or, in the case of growths, through the canine fossa. The surgeon must be guided in his selection of the site of operation or preliminary exploration by the circumstances of the case. The presence, for example, of a carious tooth would call for the alveolar operation, while in the case of sound teeth the antrum could be entered at some point above them.

Except there be some decided contra-indication, I prefer the alveolar operation. By it we are better able to drain, cleanse and keep clean the antral cavity; the operation is more easily performed, and the hæmorrhage is much less than in the intra-nasal methods; the patient can attend personally to the cleansing of the cavity, and, if it be necessary to resort to vigorous measures, such as curetting the antral cavity, the opening can be easily enlarged for this purpose.

Even when not manifestly diseased the same result may be accomplished, for it sometimes happens that the seat of the trouble is at the root without physical sign of its existence.

If the tooth be manifestly diseased, it goes without saying that by the alveolar operation we kill two birds with one stone. Contrary to the teachings of Zuckerkandl and the German school in general, I believe that inflammation of the antrum is more often the result of dental and periodontal disease than of intra-nasal origin.

The dental origin of the trouble may be and is overlooked when the offending body is a carious, suppurating pulp or fungi, with the visible portion of the tooth in a state of apparent health. In such a case the futility of intra-nasal operation is obvious.

The objections urged against this alveolar method are (1) that it frequently involves the sacrifice of a sound tooth; (2) that there is danger from entrance of food into the antrum; (3) that septic infections may occur from the mouth, and (4) that the constant drain of pus into the mouth for months and years impairs digestion and the general health.

In regard to the first objection, it is only in exceptional cases, and especially in those in which radical methods of dealing with the antrum are to be undertaken, that we would sacrifice an apparently sound tooth. Few would hesitate between the loss of a tooth, even though sound, and the loss of the middle turbinated body or the establishment of a large opening in the outer nasal wall — a condition which would become necessary in order to thoroughly eradicate the disease by the intra-nasal method.

The second objection is largely fanciful. The canula or other device used to keep the alveolar wound open may be suitably plugged or closed by other devices during eating, if necessary, and foreign substances thereby excluded. But, as a matter of fact, such accidents are not common. To get there the food has to travel a long distance, for it should not be forgotten that the cavity is high above the lower margin of the teeth. I have known patients to wear an open antral canula for years without the entrance of food into the antrum. What if a particle of food should get in?

As far as the third objection is concerned, infection is liable to occur through any open wound, whether the mouth or nostril; but while the former is the lurking-place of many a congregation of well-known and nondescript disease-producers, the latter can hold its own successfully against it as the abiding place of thousands of infective agencies.

The consideration of the fourth objection brings me to a question of great practical importance. As a matter of actual clinical fact there is very little discharge from the alveolar opening, and sometimes none at all. It has to be washed out. But, assuming that a profuse and continuous

discharge into the mouth follows the alveolar operation, should that contra-indicate the procedure? On the contrary, it is a positive indication (I am speaking of chronic cases) that the cavity should be entered by this very method, its interior as thoroughly as possible scraped out, and the discharge arrested. We do not allow cavities elsewhere in the body to go on suppurating for ever. The contemplation of the first principles of surgery should teach the veriest tyro that no exception should be made in the case of the antrum. It should simply be treated as any other suppurating cavity in the body—cleaned out, packed, and allowed to fill up by granulation.

The operation to be selected will depend upon the nature of the disease. No one method of procedure is applicable to every class of case.

In acute abscess and empyema, or in cases in which the antrum is only the receptacle for pus and not the pus-producing agent, it may be simply sufficient to resort to one of the minor operations, such as, for example, puncture above the teeth or through the anterior lateral wall in the nasal fossa. But in more chronic cases, and especially when the suppuration process is complicated by a villous or fibroid degeneration of the membrane of the sinus, the latter should be freely opened by one of the more radical methods, such as the aveolar with larger opening, or the operation through the canine fossa, its interior thoroughly scraped out and allowed to fill up with granulation tissue. It is supreme folly to trifle with such cases. To treat them by simple injections is worse than pouring water on a rock.

It goes without saying that in the case of growths or foreign bodies, the cavity should be freely opened.

After-treatment.—In the after-treatment, strong antiseptic solutions should be used with great caution. Even when fœtor exists we should not simply seek to stifle it, but to remove its cause. They increase the flow of serum and tend to keep up rather than arrest the suppurative process. Halstead has demonstrated under the microscope that a distinct line of superficial necrosis follows the irrigation of fresh wounds with even so dilute a solution of bichloride of mercury as 1 : 10,000. Antiseptics are more necessary outside than inside the antrum. Strong chemical disinfectants should also be studiously avoided. Mild treatment must be the rule.

Without enumerating the various solutions that may be employed, I may simply say that about as clean and useful an agent as any other is the permanganate of potassium in the strength of 1 : 1000. The cavity should be flushed out thoroughly, at first daily—in bad cases twice daily—with this solution, and, when it is as clean as possible, it should be syringed with some mild wash, such as Thompson's fluid. The after-treatment, then, may be summed up in one word—*cleanliness.* Keep the antrum as sterile and aseptic as possible. Many persistent chronic catarrhs of this cavity are due to neglect on the part of the surgeon of that physical attribute which we learn from good authority is next to godliness. Many are doubtless made chronic from the start by infection from unclean instruments, and then extreme chronicity may be largely due to the surgeon more than to original disease.

In packing the sinus I much prefer, especially in private practice, bismuth, or even simple sterilized gauze to the iodoform gauze usually recommended. Bismuth is for the same reason preferable to iodoform for insufflation.

There are many other points which I might take up, but as the hour is late I will simply ask attention to the following :—

I. *Importance of preliminary bacteriological examination of any existing discharge from the sinuses.*—The scientific clinical accuracy of the present day demands that all structural lesions and their products be submitted to a microscopic test. This mandate has been sadly neglected in the case of the nasal and accessory cavities, and especially in that class of nasal discharge in which pus is the chief and most conspicuous element. In order to interpret rationally the full meaning of such a discharge (condition), ocular inspection and physical exploration of the local lesion are in themselves insufficient guides to scientific operative procedure. Without bacteriological aid we are dealing, in such cases, very largely with an unknown quantity—we are not doing ourselves or our patients full and complete justice. It seems scarcely necessary at this day to elaborate such a self-evident proposition, and yet there are those who condemn such examination as unnecessary or even useless. By bacteriological examination we determine not only the nature of the infection, but we foreshadow often the possible necessity for operation, and the probable ultimate termination of the disease. I am confident that many cases of nasal discharge have become inveterate and incurable by failure at the outset to determine its true nature with the microscope.

II. *Necessity of aseptic surgical technique in operations on the accessory sinuses.*—The importance of this subject ought to be evident to intuition. So far as I am aware this class of operations is usually done without antiseptic or aseptic precautions. When we consider the anatomy of the regions involved ; how the myriad cells of the ethmoid and middle turbinated bone (which is really a part of the ethmoid) offer safe asylum for bacteria of all sorts, and become depôts of septic infection ; how readily the antrum may be infected through the nose ; and when we take into consideration the overwhelming importance of keeping the sinuses, after operation, as far as possible, surgically clean, the necessity of carrying out all operations upon them under modern surgical precautions should obtrude itself upon the recognition of even the most careless observer.

It is, of course, impossible to sterilize thoroughly the accessory cavities, but we should do the best we can. I wish to-day to plead for more thorough preliminary examination in this class of case, and for more careful surgical technique. The details may seem useless and endless, and the trouble incident to their performance may not seem justified by the excellent experience of the past ; but it pays.

It may be contended as the rich records of bygone years have shown, that as these operations may be carried out with perfect safety without the surgical precautions of the present day, that, therefore, asepsis is unnecessary and impracticable. Such logic carried to its legitimate end would stop the march of human progress.

It is not true that operations on the accessory sinuses may be carried out without danger in utter disregard of modern aseptic technique. There are cases, not all recorded perhaps, in which death has followed their performance under the old rule of no asepsis at all.

Preliminary bacteriological examination and subsequent aseptic surgical technique enable us then (1) to grasp the case in its entirety, and to foreshadow the result of treatment, (2) to reduce the danger of operations on the sinuses in skilful hands to *nil*, (3) to materially lessen the discharge and accelerate the process of repair.

Dr. F. H. BOSWORTH (New York): Mr. President and Gentlemen,—I have very few words to say on this subject. It seems to me that, when we come to discuss the question of the accessory sinuses, we have in the antrum, in the sphenoidal sinus and in the ethmoidal to deal simply with retained pus. The clinical indications are very clear; open the cavity, drain out the pus, thoroughly disinfect, and all the clinical indications are carried out. Furthermore, the symptom to which empyema of the sinuses gives rise is simply one of ordinary retained pus or oozing of pus into the nasal cavity. In the ethmoid cells we have to deal with entirely different conditions, and what I have to say to you will have to do mainly with them. To my mind their diseased conditions are by far the most interesting of all the so-called accessory cavities of the nose. In the ethmoid cells we have to deal with a kind of honeycomb bone, a mass composed of a large number of cells, each of which constitutes a small cold abscess, and which from a surgical point of view has to be treated. The interesting part of ethmoid disease, first, is in the symptoms to which it gives rise. Where there is intra-cellular pressure, or where the disease causes pressure on some of the motor centres, or base of the brain, the ethmoid disease may give rise to symptoms of a neurotic type, such as hay fever or paroxysmal sneezing. As another feature in regard to ethmoid disease, I believe that we have in it the active source of suppuration in other cavities. How suppuration gets into the antrum is easily explained. It is the natural drainage passing down towards the normal opening of the antrum. It may go into the sphenoidal sinus, although this I do not know. We know less about the sphenoidal sinus than recent literature would seem to indicate. The sphenoidal cells are to me practically unknown ground. I read with a certain amount of incredulity the literature on the subject of direct and very positive diagnoses made. Authors state that from *post-mortem* examination they find the sphenoidal sinuses have been involved, but are these cases, which are spoken of so frequently as so easily cured, sphenoidal disease? Returning to ethmoidal disease, am I mistaken in my diagnosis? Is it by far the most frequent kind of disease which we meet with in the accessory sinuses, when out of two hundred cases there are but twenty-eight cases of antrum disease? Is this the proportion that you meet with? It is not the proportion that the literature of the last five years would warrant. I may be in error as to my diagnosis, or perhaps someone else makes the mistake.

As to the treatment of this disease, the surgical indications seem clear, if we carry them out, and open every one of the little cells and thoroughly

disinfect them. We can get into the antrum with facility; the ethmoid cells are more difficult to enter. Can we go in with the galvano-cautery? It seems to me it involves great risk. Can we enter with a hard, stiff spoon into a long, irregular cavity? I cannot do it, and it does not strike me as an efficient instrument. The curette is not an efficient instrument in my hands. I know of one method that has been successful, and that is the burr. But it will be said that this is dangerous surgery. It seems to me a far more delicate instrument than the curette or the galvano-cautery Used with the dental engine, its motion can easily be arrested. Removal is first made of the anterior portion of the anterior turbinated body, and then the cells entered with a burr three-sixteenths of an inch in diameter. Make, perhaps, a dozen turns, then feel with the burr until some hard, loose bone is found, which should be burred away. I have done this in about one hundred and fifty cases. Some of these were not ethmoids, but I have, probably, burred the ethmoid cells in over one hundred instances. We do not cure these cases speedily; it may require a long time. It is delicate work, in an exceedingly dangerous locality, close to the base of the brain and close to the orbit; but, with one exception, no accident has happened to me in all the cases I have operated upon. This case, that of a naval officer, was the result of what is called influenza. He had been seventeen years in Italy. Since then he had suffered with chronic suppurating discharge of pus from the nose. I burred out his ethmoid cells very thoroughly. He sat in a chair afterwards for a little while, and the first thing I heard was a sound as if he were blowing his nose. I turned round and saw that his eyes were starting out of his head. He had empyema of the orbit, which was most startling for the time, but disappeared in a few days. This was not caused by the burring, however.

This method seems to me to carry out all the clinical indications in these cases better than the curette, the spoon, the galvano-cautery, or any other appliance.

Dr. Luc (Paris). Gentlemen,—My aim, in joining in this discussion, is simply to present to you the result of my personal experience on the subject. In fact, since the beginning of my special practice, I have been induced by circumstances to devote myself with a sort of predilection to the study and treatment of empyemas, first of the maxillary, then of the frontal sinus. I published, six years ago, in the "Archives Internationales Laryngologie et de Rhinologie," a critical review on *Empyema of the* de *Antrum of Highmore*, which, I think, greatly contributed to initiate the French medical public to Von Ziem's remarkable and, I may say, revolutionary articles on the subject.

Last year I published in the same paper, and in the "Semaine Médicale," the history of three women whom I had successfully operated upon for suppuration of the frontal sinus, and I called the attention of my readers to the progress successively realized, from one patient to another, in my experience and method of treatment. Since then a new fact enabled me to get a more precise view of that hard clinical problem. In some of my patients suffering from suppuration of the frontal sinus, the anterior ethmoidal cells were implicated in the disease, and required an intrusion of the surgical treatment to their cavities.

I have had on no occasion any case of sphenoidal suppuration under my care. I will, then, systematically omit the latter affection from my study, hoping that, though thus limited, this essay will not be quite destitute of interest for you, and will perhaps contribute to the progress of our ideas on the subject before us.

I will say little on suppuration of the antrum of Highmore, having but little to add to the generally accepted views on the surgical treatment of that affection.

Generally speaking, it may be said that its radical cure is one of the most difficult tasks proposed by clinical practice. One of the reasons commonly advanced to account for that difficulty is the rigidity of the walls of the antrum of Highmore, a condition common to all accessory cavities of the nose; but there is another and not less important reason, and here the maxillary sinus differs from the other accessory cavities; I mean the impossibility of creating a communication between the lowest part of this sinus and the nasal fossa, which represents the natural outlet for its secretions. In consequence of these unfavourable conditions, our hope of obtaining a radical cure of a somewhat protracted suppuration of the antrum of Highmore must be founded on an energetic treatment of its internal surface, such as can only be effected through a large opening of its anterior wall.

I am, therefore, firmly convinced that the latter operation is the single one to be proposed to the patient, if the suppuration persists for some months, after the alveolar opening has been made, in spite of the various means (injections, insufflations, cauterizations) generally had recourse to in such circumstances, and which, taking into account the narrowness of such an opening, can be effected but *blindly, and at random.* When the anterior wall of the maxillary sinus has been opened according to the method I adopted after reading Jansen's interesting article on the question, the situation is totally different. In fact, the opening I make is such as will admit, at the end of the operation, my index finger, and during the following period a common speculum nasi, which enables me to inspect minutely the cavity, just as if I had to do with the nasal cavities or the larynx, and to treat *not blindly*, but with the utmost precision, by means of curette or caustic, any lesion of its surface suspected of maintaining the suppuration.

I need not add that the same large opening gives the operator a great facility for insufflating various powders into the cavity, or plugging it thoroughly with iodoform gauze.

Since adopting this method, I have had the satisfaction of obtaining a complete cure, after a lapse of five or six months, in cases that had resisted other methods of treatment.

I consider it a *sine quâ non* of such a result that the patient, after undergoing the operation, does not slip away from the operator but continues to be observed and treated by him as long as is necessary.

I hasten now to broach the question of the surgical treatment of the frontal sinus, which, as already mentioned, has been the subject of my special attention and interest for the last few years.

In order to give you a clear idea of the gradual improvements which

my treatment underwent until I adopted my last surgical method, I deem it best to give you a summary of the clinical observations of the four patients whom I had the opportunity of operating upon.

All four were women. The first three were affected with an empyema of the right sinus. In the last one, on the contrary, the suppuration occupied the left cavity, and I draw your attention to the fact that this is the only example of an empyema of the left frontal sinus among six which came under my observation.

The history of the first three patients has appeared in the "Semaine Médicale" and in the "Archives de Laryngologie" of last year, whereas the observation of the last has not been published yet.

The first of my patients, about fifty years of age, had been complaining for the last six years of a fœtid purulent discharge from the right nostril. There was neither pain nor swelling in the frontal region.

After finding the middle meatus of the nasal fossa full of pus, I first thought I had to do with an empyema of the maxillary sinus, inasmuch as the first large molar was carious; but after opening the antrum Highmori through the socket of that tooth, I found it contained no pus, and I proposed, therefore, the opening of the frontal sinus, which was accepted. After making an incision along the internal third of the eyebrow and the corresponding edge of the root of the nose, I opened the anterior wall of the sinus by means of chisel and hammer, on its lowest portion, making the opening the size of a sixpenny piece, and found the sinus filled with pus and granulations which I removed carefully with a curette. I then introduced through the frontal canal an india-rubber drain which was fixed by means of thread and collodion, its upper end protruding out of the wound and its lower one out of the nostril. Injections with a solution of boric acid were performed daily through this drain during the following fortnight, which was then removed and the wound allowed to close.

After a lapse of two months, the signs of suppuration, which had been temporarily suppressed by the operation, appeared anew. I then proposed, and was allowed to perform a more radical operation. The sinus was laid open again, but this time I removed completely, by means of cutting forceps, its anterior wall, only respecting the orbital area. The fungosities which had reproduced themselves were scraped away, and the bony surface touched with a solution of chloride of zinc (one in ten). The space between the skin and the deep wall of the sinus was then plugged with iodoform gauze. This plugging was renewed during the following weeks, with a progressive diminution of the gauze employed, as the integument progressively adhered to the deep bony wall from the periphery to the centre. Only after a lapse of about six months of regular wound-dressing I let the wound close, the patient recovering with a deep sinking of the skin. I cannot say that the suppuration was thoroughly stopped, as the middle meatus continued to present for months, though intermittently, a small quantity of pus, which I attributed to a participation of the anterior ethmoidal cells in the disease.

If I sum up this case, we see that the patient had to submit herself to

a double and severe operation, and to the necessity of having, for months, her head dressed with a bandage, and all to get an imperfect result.

The next patient, a girl, sixteen years of age, presented already, when she first applied to me, signs of an extension of the suppuration to the deep tissues of the upper eye-lid, in the course of an unrecognized chronic empyema of the right frontal sinus.

After removing the anterior wall of this sinus, I found it full of pus and granulations, extending to the ethmoidal cells. I removed the granulations with a curette and, while doing so, destroyed the greatest part of the floor of the sinus, and thus involuntarily created a large communication between the frontal and the nasal cavity. The bony surface was then touched with a strong solution of chloride of zinc (one-third), and, after plugging the open cavities with iodoform gauze, I left the wound widely open. The dressing was left *in situ* for eight days. After removing it, I proceeded to a careful rhinoscopy, and could easily realize that the frontal sinus was distinctly visible and largely accessible through the nasal fossa.

This suggested to me the plan of closing the wound at once, and effecting the drainage through the nasal fossa, in order to spare young ladies, in the future, the inconvenience of a disfiguring scar. For that purpose a big drainage tube of india-rubber was pushed through the nasal cavity into the frontal sinus, its lower end being kept immovable at the entrance of the nostril by means of a thread fixed to the cheeks with collodion. The lips of the wound were then put into contact by means of strips of iodoform gauze and collodion.

The adhesion of the latter was soon effected, except at the internal extremity, which remained fistulous for a while. Two weeks later, the fronto-peripheral swelling, which had completely disappeared in consequence of the operation, showed itself again after an unfortunate attempt to substitute a strip of gauze for the drainage tube, which proved that gauze cannot be considered as a substitute for a drainage-tube. The alarm awakened by the reproduction of the swelling was but temporary, as this symptom completely vanished two days after the reinstatement of the tube. As long as the latter remained *in situ*, injections with a boric solution were daily performed through it. During the first days the liquid could be seen gushing out of the fistulous extremity of the wound. When this took place no more, I applied a light compressing bandage to further the closing of the fistula.

Two months after the operation, no appearance of purulent discharge being observed through the tube, I removed it permanently, the young patient being instructed to perform injections into the nasal fossæ whilst the canula was directed towards the region of the frontal sinus.

A month later, the girl was completely cured, and the rhinoscope showed the internal surface of the sinus white and dry, with no appearance of suppuration or granulations. This clinical observation was invaluable to me, as it showed me the possibility of closing the wound much sooner than was generally done, and at the same time spared the patient many months of dressing.

In this young lady's case the closure of the wound had been effected

secondarily. I resolved to avail myself of the next occasion to close it primarily, after fixing the drainage tube in the sinus at the end of the operation.

This occasion soon presented itself. About the time when I was dismissing the former patient as cured, I was consulted by a lady, thirty-six years of age, who had been complaining, for the previous three weeks, of violent pain in the right half of the forehead, complicated with purulent discharge from the nostril of the same side. I noted by rhinoscopy that the pus came from the middle meatus and, as the electrical illumination of the mouth had not allowed me to detect any difference between either maxillary cavity, I stated we had to do with an acute empyema of the right frontal sinus, and proposed operation, which was agreed to, and performed on the following day.

On the sinus being opened by removal of a part of the anterior wall, corresponding to a shilling in size, it was found full of pus, but contained no granulations. After cleaning it I perforated, by means of a drill, the floor of the sinus, and enlarged the opening with a curette, which I then directed to the ethmoidal cells, supposing they might also contain pus. I then introduced through that opening into the nasal fossa, till it projected out of the nostril, a Panas' silver curved probe, and fastened to it a drain, which, by drawing the probe from below upwards, was lodged deeply in the sinus, its inferior extremity being fixed at the entrance of the nostril.

The wound was sprinkled with iodoform, then sewn up, and tightly dressed.

On removing the dressing, three days later, the wound was found completely healed. After a lapse of a week further dressing of the wound was given up. Two days later the drain, which had been made use of for daily antiseptic injections into the morbid cavity, was definitely removed.

A fortnight after the operation the patient could be considered as completely cured, and presented, as consequence of the treatment, a hardly visible scar.

My attempt had here been a complete success, but my satisfaction, in order to be complete, required the application of the same method not to a case of acute frontal empyema, but to a chronic case complicated with granulations. Such was the case of the fourth patient, whose history follows.

Mrs. R., thirty-three years of age, servant, came to consult me in my dispensary last March, complaining of a fœtid purulent discharge from the left nasal fossa, dating from three years back, and complicated, for a few months, by a feeling of painful tension over the eyebrow.

Rhinoscopy showed the middle meatus filled with myxomatous masses and creamy pus, and the electric illumination of the face gave a complete darkness of the left cheek and inferior eyelid, contrasting with the translucency of the right half of the face. It was then evident that the left maxillary sinus contained pus, but taking into account the integrity of the large molar teeth and the pain awakened by pressure on the supra-orbital region, I diagnosed double empyema of the frontal and maxillary sinus, the latter consecutive to the former.

On the 23rd of March the left maxillary sinus was widely opened, under chloroform narcosis, and found filled with offensive pus and granulations, which were carefully scraped away. The cavity, which easily admitted the index finger, was then cauterized with a solution of chloride of zinc (one-tenth) and plugged with iodoform gauze.

During the following days, suppuration persisting in the middle meatus, in spite of the complete cleansing of the maxillary sinus, there could remain no doubt but that it was derived from the frontal sinus, which was opened a week later, according to the above described method (2nd of April).

It was found filled with creamy pus and granulations, extending deeply between both plates of the frontal bone, and down in the anterior ethmoidal cells. After a thorough curettement of the cavity, a Panus' probe was passed through the bony opening, down into the nasal fossa, then out of the nostril, and a big india-rubber drain fastened to it was then introduced through the nostril up into the sinus, and fixed by its inferior end, by means of a thread, to the cheeks. The cavity of the sinus was then filled with iodoform powder, and the wound sutured and dressed with iodoform gauze and wadding tightly applied.

During the following days an injection was gently made through the drain, with a lukewarm solution of fluorol (4-1000).

On the 6th of April the dressing was removed, and the wound looked quite healed.

17th of April. The drain was removed on the following day. I noticed that the mesial and inferior end of the wound had reopened, letting escape a drop of pus.

A careful examination of the nasal fossa enabled me to account for the failure of my method. In fact, the middle meatus had been insufficiently cleaned of the polypi which filled its cavities, and the consequence of it was, that no sooner had the drain been removed than the communication insufficiently established between the sinus and the nasal fossa had become shut off at once.

28th of April. After a careful examination of the middle meatus, the myxomas were curetted as thoroughly as possible; but the rather profuse hæmorrhage provoked by this operation obliged me to plug the region tightly with salol gauze and to leave the plugging *in sitú* during forty-eight hours. There I had again an opportunity of ascertaining how inferior gauze is to rigid tubes as a means of draining. In fact, I found the patient, after that interval, presenting a swelling of the supra-orbital region, which proved clearly that pus, as well as blood, had been stopped by the plugging. Of course the swelling disappeared shortly after the removal of the gauze; but a new inspection of the nose brought me to the conviction that, the communication between the sinus and the nasal fossa being insufficient, such accidents as the last observed were liable to reproduce themselves. Palpation of the supra-orbital region gave to the finger a doughy feeling which, in accordance with the fistulous condition of the inferior end of the wound, made me suspect that fungosities had reproduced themselves in the sinus, and were reaching the deep surface of the skin. Those considerations led me to the decision of performing

anew the operation, with the aim of destroying, as completely as possible, the floor of the sinus,[1] and extending the curettement to the anterior ethmoidal cells.

Before putting my plan into execution I tried it on several dead bodies, and ascertained that, after a sufficiently large opening of the anterior wall of the sinus, the posterior and greatest part of its floor could be removed by means of a fine grooved chisel, applied perpendicularly to it, but that, owing to its considerable thickness, the anterior part ought to be respected, in order to avoid a fracture of the neighbouring orbital arch.

The operation was performed on the 27th of May, and, as expected, I found the deep surface of the skin and the cavity of the sinus invaded by freshly developed granulations, which I carefully curetted, even in the deepest recesses of the cavity. The floor of the sinus was then destroyed by slight blows, by means of a fine grooved chisel, from behind forward. Then the curette was directed towards the middle meatus and the ethmoidal cells. Lastly the cavity was filled with iodoform powder, a drain tube bigger than that used the first time pushed into the frontal cavity, and the wound sutured immediately.

The dressing was this time left days *in situ*. Every day an injection was made through the drain tube with a solution of sublimate (1-4000), and immediately afterwards a solution of iodoform in sulphuric ether injected towards the sinus by means of a Pravaz's syringe provided with a long canula, which was introduced into the tube up to the entrance of the sinus ; my intention in doing so was to keep, as far as possible, the bony cavity in an aseptic condition.

When the dressing was removed after a lapse of eight days, the wound seemed perfectly healed up and the threads could be removed.

The dressings were renewed and the same local treatment continued till the 7th of June, when no more dressing was applied to the wound, and boric solutions exclusively injected into the tube.

I had then a fine prospect of a quick recovery when a slight accident made me fear for a while a new miscarriage of my method.

On the 14th of June, while washing her face the patient tugged involuntarily the threads that kept the inferior end of the tube fixed, causing the exit of the latter from the sinus, the opening of which was probably shut up by its walls after an unsuccessful attempt of the patient to replace it in its former position.

At all events I was most disagreeably surprised, when, on seeing the patient three days later, I noted a new swelling of the left half of the forehead, and a drop of pus occupying the mesial end of the wound, which was a sort of very small fistula.

After removing the drain tube completely I was able to realize plainly that its accidental bad position could alone be held responsible for the pus retention, for no polypi could be detected in the middle meatus, and, in consequence of the partial destruction of the floor of the sinus, this

[1] This destruction of the floor of the sinus having as a consequence the direct communication of this cavity with the nasal fossa, and the possibility of inspecting it subsequently by rhinoscopy, can be compared with the destruction of the external wall of the attic in Stacke's operation on the ear.

cavity was in large and direct communication with the nasal fossa. I then applied a new and tight dressing to the wound, and prescribed daily injections in the nose after teaching the patient to direct the canula upwards towards the opening of the sinus.

The patient's condition is actually (beginning of July) the following:—The wound is completely healed. There is no swelling of the supra-orbital region, nor any other sign of retention of pus. The suppuration, though notably diminished, persists, forming a deposit of green or yellowish crusts in the upper region of the nasal fossa only if the patient neglects her daily injections, even a single day. The crusts are easily expelled by means of an injection directed towards the breach made on the floor of the sinus, but another injection made through that breach, by means of a curved canula upwards and forwards, expels a new quantity of pus of creamy appearance.

Injections performed through the narrow fistula, to which the large opening of the maxillary sinus is now reduced, still cause the expulsion of a small quantity of muco-pus.

In the course of July the suppuration of the frontal, as well as the maxillary, sinus presented a gradual diminution.

On the 22nd of this month I found no pus in the nasal cavity, though no injection had been made for the last five days.

The cure was obtained in this case within two months, which is not likely to seem a particularly long time to those of my colleagues who have had to deal with the difficulties of that specially refractory class of empyemas of bony cavities characterized by a remarkable abundance and power of reproduction of granulations. The various accidents met in the course of the treatment, one of which brought me to the necessity of repeating the operation, will be easily avoided in the future by more decision in destroying the floor of the sinus, and by a modification of the form of the drainage tube likely to prevent its escaping from the sinus. That modification would consist in an enlargement of the upper end of the tube, making it resemble those employed by Prof. Guyon, of Paris, after certain operations on the bladder. Such a drain, of course, ought to be introduced from above downwards, which is not likely to meet any particular difficulty.

I am happy to say in conclusion that Dr. Panas, the able professor of ophthalmology of Paris, did me the honour of applying my method in several of his patients affected with ocular complications in the course of suppuration of the frontal sinus, and declared himself highly satisfied with the result obtained in every case.

Dr. D. BRYSON DELAVAN (New York). Gentlemen,—No more appropriate question could have been chosen for this discussion than the surgical treatment of suppurative disease of the ethmoid cells; although excellent progress has of late been made in connection with it, there is yet much to be learned, not only with regard to the utility and application of the various operations themselves, but also to the results which may ultimately follow them.

Through the admirable work done, within recent years, in the anatomy of this region, the general structure and arrangement of the

parts have been fairly explained, and the vast number of abnormalities and deformities which may occur in them has been, to a certain extent, appreciated. The peculiar intricacy of the region, however, and the frequent and sometimes exaggerated departures from the normal above mentioned, frequently obscure diagnosis, and render treatment difficult, if not actually hazardous.

In dealing with the ethmoid cells, it must be recognized that they are multiple, and that treatment directed to one or two of them, when others are affected, will fail of its object. The possible existence of the peculiar enlargement of the middle turbinated body, described by the author a number of years ago, and further explained by later observers, should be remembered, and the part which it may take in general ethmoidal disease recognized. In this an abnormal expansion of the turbinated body is found to consist in an inflation of its walls, with great increase in the size of its cavity, which latter being lined with mucous membrane, renders them liable to various forms of disease. In general, it may be said that suppurative disease of the ethmoid cells is usually caused by some acute process attended with occlusion of their normal outlets. This condition soon becomes one of acute suppuration, in turn becoming chronic with retention of the morbid products and the formation of what is, practically speaking, a chronic abscess. The obstruction to the drainage of the cells may be due to causes located in the canal itself, to thickening of the soft parts in the neighbourhood of its mouth, or to the deformities of the middle turbinated body, or of the septum in the same situation.

In the history of cases of ethmoid disease, the beginning of the trouble is usually referred to an attack of acute nasal inflammation of some kind. The expression "cold in the head" has long ago ceased to satisfy us. Certain peculiar forms of coryza, notably that commonly occurring with grippe, seem remarkably prone to be associated with or followed by it. The suspicion of a specific infection is still further intensified by the bacteriological studies of recent observers, so that the chain of circumstances seems to have been made tolerably complete, and, briefly stated, would consist in inflammation of the lining of the cavity, possibly from entrance into it of an infectious element; intumescence of the mucous membrane, with occlusion of the canal; accumulation of secretion which, after a time, becomes purulent; abscess, and, as a final result, the local changes and various reflex irritations naturally following such a cause. In some cases the etiology is obscure.

In this brief *resumé* the suggestions as to the indications for treatment seem obvious.

Undoubtedly the golden opportunity for it is afforded in the early stage of the disease, and while it is yet acute. It cannot be too strongly urged that cases of severe coryza should be taken carefully in hand, and, at the earliest intimation of involvement of any of the sinuses, particular attention paid to allaying the irritation and to keeping the outlets of the adjacent sinuses as patent and as free from secretion as possible. Greater attention to this very evident matter would probably prevent much of the necessity for later surgical measures.

When chronic disease has actually developed it still may remain a

question whether, in a given case, extreme radical measures may be required or not. While the importance of conservatism cannot be too strongly urged, the fact must be recognized, that there are some cases in which the symptoms are so dangerous that the necessity for their relief is absolutely imperative. The indications present in all cases seem to depend, without question, upon the absolute and thorough drainage of the one or more affected cavities or sections of the collection of cells known as the ethmoid sinus, and upon persistent cleansing and disinfection of them, and the removal from these cavities of all diseased and therefore offending tissue.

These principles, skilfully carried out, form the basis of the most successful treatment yet known. In operating, the first requisite is a good illumination, with the best possible exposure of the parts. At once we find in most cases that the anterior section of the middle turbinated body not only hinders drainage, but also effectually conceals the base of the ethmoidal region from view. The first thing to be done, therefore, is either to cause the obstructing tissue to subside sufficiently to admit of the necessary examinations and manipulations temporarily under the influence of cocaine, or to remove it altogether. The latter will generally be required before a satisfactory result can be obtained. If the obstruction consists of enlargement of the soft tissues alone, it may easily be overcome. Sometimes, however, the bone itself must be attacked.

The extent to which the middle turbinated body should be removed has been a matter of some controversy.

I cannot help regarding wholesale destruction of it, especially where not absolutely demanded by the exigency of cases which in my experience have been unusual, as distinctly objectionable. The judicious exsection of a limited portion will generally give sufficient access for all practical purposes.

As to the manner of removing the turbinated, that instrument or class of instruments should be selected which can be manipulated with the greatest accuracy and with the least tearing and fracturing of the tissues which it is intended to leave behind. When the end of the turbinated body is suitably shaped, the snare is one of our best resources.

The ethmoidal region having been exposed, it will often be found that the space between the middle turbinated body and the outer wall of the nasal cavity has been more or less completely occupied with polypi. Whether the latter are the cause of the ethmoidal disease or a consequence of it is at present an unsettled question. My own opinion inclines to the latter view.

The thorough removal of these growths is, of course, a necessary step. For its accomplishment, in addition to the instruments commonly employed, I have found a small ring knife useful, or the Jarvis snare threaded with wire of unusual fineness. Access having thus been gained to the cell outlets, it will sometimes be possible in the less severe cases to obtain relief by simply keeping the parts well cleansed and by building up the general condition of the patient. In the serious cases such treatment will not be likely to prove effective, and radical measures will be required if the urgent symptoms of local irritation and reflex pain are to be removed. These consist in the thorough opening up of the diseased cells. To

meet this end several plans are recommended. Thus, Bosworth advises that a small round or oval burr attached to a dental engine be made to enter the ethmoid cells and cause the removal of such bony fragments as it may be desirable to destroy. If the burr be attached to a suitable motor its motion can be instantly arrested at will, when it may be made to act as a probe for exploring the cavity for such parts as should be removed. Bosworth does not advise that the operation should necessarily be completed at one sitting, but states that in many cases the process may have to be repeated a number of times at intervals varying from a week to a month and often longer. Bryan, Schaefer, and others favour the use of a sharp spoon, while others prefer a sharp curette such as the instrument devised by Mylęs. The latter, furnished with a flexible shaft, is a valuable instrument in the treatment of many conditions other than the one under discussion. Small cutting forceps in various shapes may be used with advantage, and although possessed of great power may be made sufficiently small to be admitted into all the narrowest spaces. In operating it is necessary to remember the importance of thoroughly exposing the affected cells and of removing all of the causes of irritation, such as thickened membrane, polypoid masses and necrosed bone, which may be within them.

Following operation the cavities should be thoroughly washed and afterwards dusted with some good disinfectant or packed with gauze, and this repeated as often as may be necessary. Such a case should be seen at frequent intervals by the surgeon, and never allowed to remain long away from his observation until sufficiently advanced towards recovery.

The pathology of suppurative disease of the ethmoid cells having been fairly explained, and the principles of treatment thoroughly understood, it becomes necessary to recognize the fact that the measures advocated for the more serious cases are exceedingly severe. Removal of portions of the turbinated bone, and entrance into the cells, are not accomplished without considerable pain and subsequent irritation, and, moreover, the parts are left in a state of mutilation at once unnatural and calculated to interfere with their ordinary functions. That all of this may be demanded through the failure of other methods and the urgent necessity for relief is proved by the success which has often attended it. Nevertheless, it is wrong to regard radical operation otherwise than as a serious thing, and one not lightly to be entered upon. Without question, the difficulties in the way of diagnosis, the extreme intricacy of the region, and the important, if not actually dangerous, injury likely to be inflicted by unnecessary or incautious surgical interference, all demand that such cases be managed with the greatest conservatism. Over treatment is a grave error, and one certain to reflect gravely upon the surgeon. Conducted with proper skill, the surgical treatment of ethmoidal disease is capable of producing most gratifying results. After all has been said and done in the matter, there still remains an hitherto unsolved question of too great interest to be ignored, namely, are radical operations on the ethmoidal cells likely to lead to permanent disability of the parts attended with objectionable symptoms?

To this question I would beg leave to call your particular attention.

Clinical Considerations on the Treatment of Empyema of the Frontal Sinus. By Dr. E. J. MOURE, Professor at the Faculty, Bordeaux.

My aim is not to study here the various symptoms which characterize chronic suppuration of the frontal sinus, nor to review before you the detailed anatomy of these regions of the nasal cavity. I shall confine myself simply to the statement that we can clinically distinguish two kinds of sinusites: (1) Those which empty externally in consequence of enlargement of the naso-frontal canal and the infundibulum, either because the very fluid secretion creates a ready way across these channels; (2) a class which is characterized by the nearly complete or absolute absence of suppuration, *i.e.*, veritable latent empyema, which it is necessary to discover by means of the various methods of investigation at our disposal to-day. The first variety of these inflammations of the frontal sinus is little or not at all painful, the second, on the contrary, determines the appearance of pre-orbital or frontal neuralgias, which constitute an important element of diagnosis.

In the suppurative sinusites the frontal cavities and their passages are enlarged, but the middle and inferior turbinateds remain small, so that the unciform apophysis appears very clearly upon rhinoscopic examination, and it is very easy to place in the entrance of the fronto-nasal canal a canula, or even in its interior, which allows of the pushing of an injection into the dilated frontal sinus, and often into the anterior ethmoidal cells, which are cleansed in its passage.

In *latent empyemas*, on the contrary, the osseous septum (perpendicular plate of the ethmoid) is oftenest displaced on the affected side, so that the middle turbinated, distorted, comes to hide the middle meatus and touch the inferior turbinated. No luminous ray can be projected towards the probable orifice of these cavities (frontal and maxillary), and direct treatment, by this means, is absolutely impossible. All the more ought we to, in such cases, arrive at some means of making penetrate some fluid in the direction of the sinus supposed to be affected,[1] to enable us thus to establish a definite diagnosis. It is to this class of cases, and to those intermediary, that I reserve, systematically, surgical treatment. Every time that the spine of the unciform apophysis is hidden, and that I am certain of having to do with a frontal or anterior ethmoidal suppuration, I do not hesitate to practise extirpation of the anterior half of the middle turbinated. This proceeding has generally given me excellent results, either by permitting more direct treatment of the affected part, or by opening a larger path for the thick and viscid secretions which flow with so much difficulty from such sinuses, narrow, and very slightly open.

Extirpation of this turbinated has never been followed by any accident. It is practised at our clinique at Bordeaux, with the cold snare, or by preference with the double gouge forceps, of form and calibre varying according to the size, small or large, of the nasal fossæ operated upon. Ablation of the middle turbinated changes a little the anatomical relations of the region, but one soon gets accustomed to this new state of things,

[1] It is well understood that every hypothesis of maxillary sinusitis is eliminated from our mind, and that we have in view only inflammations of the frontal cavities.

which also allows the patient with rebellious sinusitis to use the handkerchief freely and to suffer no longer. This is, alas, the only end we can attain to in many cases of suppuration of the accessory cavities of the nose.

En résumé, without being as absolute as Hajek and Hansberg, I estimate that it is necessary to remove the anterior half or one-third of the middle turbinated in all cases when a frontal sinusitis is painful, and that the inferior orifice of this cavity is not easily accessible to means of exploration and ordinary treatment. This is the only aim of my short communication on this interesting subject.

Mr. LENNOX BROWNE: I rise, sir, as one of the original members of this Association, not for the purpose of entering greatly into the discussion, but to thank our distinguished visitors for the excellent communications which they have made, and I am sure all the Fellows here present will join with me in that expression. These communications—the first of several to be offered—would of themselves justify us in having gone a little out of our way to invite their presence, and we are very much rewarded by them.

The younger Fellows of this Association, Mr. President, have a great advantage over the older ones. I passed upwards of seven years in daily practice at the Golden Square Throat Hospital, and never saw a single case of maxillary empyema—much less one of ethmoidal, sphenoidal, or frontal—diagnosed; but, within a year of ceasing attendance at Golden Square, I had the opportunity of seeing four cases of the first-named class.

There are one or two points I noted in the various papers, on which I would lightly touch. With regard to Dr. John Mackenzie's interesting communication, although I am quite willing to admit that disease of the teeth is not by any means so uniform a cause of maxillary empyema as we formerly believed, it is, nevertheless, a very frequent cause, and in the majority of cases there will be found a socket ready for the preliminary perforation, which, in the first instance, is preferable to an opening in the nose. Nor need we always begin by making a large opening in the canine fossa, but employ perforation of the socket as an exploratory measure, which will in all cases establish our diagnosis, and in not a few lead to a cure. If it does not, no harm has been done, and we can proceed to a more radical operation.

With regard to the operations in the canine fossa, I have learned from the results of the counter opening in the nose, which is a necessary part of this procedure, that we should have greater success by perforation of the socket, if we at the same time made a large nasal opening similar to that advised by Prof. Krause. For it is essential to establish free irrigation, and it is certainly a fact that in many cases the natural ostium maxillare is either too small for free irrigation, or is obstructed by some inflammatory swellings or granulations within the nostril.

As to the question of food getting into the antrum through any buccal opening, that is of course avoided by always having the canal plugged. I quite agree with Dr. Bosworth as to the inadvisability of making our irrigating solutions of a high strength of disinfectant, but I may remark that one of my patients cured herself by inadvertently using an undiluted

solution of chloride of zinc, with the result of setting up inflammation, which led to a cure. I think Dr. Mackenzie, in regard to the maxillary antrum, has a little overlooked what we have learnt in recent years, namely, the fact that we have not only a simple abscess to deal with, but often an accompanying mass of fungosities and myxomatous tissue. Larger openings must be made to thoroughly curette the cavity than can be obtained by socket perforation, just as much in the maxillary antrum as in the ethmoidal or sphenoidal sinuses, where they are the seats of pus.

Dr. Luc, in his admirable address, delivered with a delightful diction and choice of language, which even we Englishmen might envy, spoke of a case in which finding granulations in the nasal fossa, he removed them, but pus still secreted. He tapped the antrum with a good result. This is a very useful procedure, which I constantly practise. But Dr. Luc said that seeing the pus there he made up his mind that there was a frontal empyema. Why not an ethmoidal? I would like to ask him how, with any degree of certainty, he could diagnose a sphenoidal from an ethmoidal or frontal empyema simply by the objective evidences without regard to symptoms. My friend Bosworth, a few days ago, told me, when seeing a patient of mine, who had a polypoid mass in the nostril, that he was sure from this fact that the man had ethmoidal disease. But surely this does not constitute a distinction, the existence of polypi pointing rather to chronicity than to site. I have had one case in which I trephined the canine fossa, and on the disc when removed was a mass of myxomatous tissue, large as the top of my thumb. You may get granulations in any of these cavities. Quite rightly, as Dr. Luc says, in the acute ones you may get serum, muco-pus, or pus only, but in the chronic ones you are always likely to find also myxomatous granulations. I beg once more to tender my hearty thanks to our visitors for their communications.

Dr. W. H. DALY (Pittsburg, Pa.): I desire merely to say a word or two with reference to the seat of operation in diseases of the antrum. By putting the finger into the mouth one feels the prominence just above the first molar tooth, and you will find there a location, which I believe to be the most eligible for entering the antrum in all chronic cases. It is possible to have unlimited discussion on theories, but when we come to a practical consideration we should endeavour to get those methods which are simple and quickly carried out. The last few years the operations on the antrum that I have done have been of a very simple character. I have entered the antrum by the way referred to in very chronic cases, one of thirteen years' standing. I entered the antrum just above the first molar with the tip of the instrument, which required but a simple drill. I do not think any case that has gone on for six or eight months or a year should be considered as having been properly treated unless the curette has been freely used, and making the opening in this location it is quite possible to use the curette. You can throw in from a quart to half a gallon of fluid with a Davidson's soft rubber syringe by letting the patient hold his head forward and his mouth open. Almost all the fluid will run out through the natural opening into the nose. There is one point upon which we have not sufficiently touched in all that has been said on the

subject, and that is this:—It has been said that the requirements are fulfilled when you have opened the antrum and drained it. I do not think so. In the case I have referred to, the patient had been under a physician, who was considered very skilful, for a period of thirteen years, and had had the antrum washed out daily for years. After you have opened the antrum, some means must be adopted that will prevent the formation of pus. So after curetting, I think this is best attained by careful aseptic packing of the antrum. I have recently been very much pleased with this method. I have the antrum packed with narrow strips of unbleached muslin, which has been boiled and then immersed for twenty-four hours in 1 to 2000 HgCl., then in a mixture of eucalyptus oil, one part of oil, and about eight to ten parts of the compound tincture of benzoin. Some amount of inflammation may occur in the antrum after the first week, which, having been superinduced by the curetting, should be kept up, but within safe limits, by means of cloths dipped in ice water and applied over the face.

With reference to the data in treating ethmoidal disease and sphenoidal disease, I am sorry that the gentlemen who have given us such very able remarks have not mentioned anything reliable as to data in entering the ethmoidal and sphenoidal cells. Dr. Bosworth has said that it is easily done, yet he very wisely qualified his remarks by saying that we are working very near the base of the brain. Now, as I have remarked recently in our American Laryngological Association meeting at Rochester, New York, teaching the rhinologist to use the curette, the burr and the spoon in sphenoidal sinuses is not so simple a matter as teaching children to put beans in their noses; so that it rests upon those who are doing valuable work and teaching others, to give the men who have not been so happily situated in the smaller cities some data on which they can go as practitioners to treat their patients and do it with safety.

In a recent discussion, in which I took part, one gentleman, in answer to a question I believe, said that a very good guide was to measure two or two and a half inches from the tip of the nose, and that in a proper direction they then would find the ethmoidal cells. Another gentleman said, if you measure three inches you would find your position; another one, I believe, gave it as four inches; another suggested six inches. A very wide margin indeed! I merely bring this phase of the question up to show what a valuable and prolific field we have yet to work upon, and what a great amount of good our learned friends may do us by giving us correct data that will be useful—data with a much less liberal margin; and unless I can have such data I prefer to continue to do what some of my colleagues are very much shocked at me for having done, viz.: I make an incision through the alæ nasi, up alongside the nose where it joins the cheek, then cut through the septum and lay the nose over on one side of the face; then I have got both data and daylight upon the subject. The parts are replaced with so slight a scar as to be scarcely noticeable afterwards.

Mr. MAYO COLLIER: I would wish to add my vote to Mr. Browne's proposal of our best thanks for the able addresses to which we have been treated by the introducers of this debate. There are but few moments left for discussion, and I would confine the few remarks I have

to make to, in the first place, express my appreciation of the very able manner in which Dr. Luc treats disease of the frontal sinuses. I would also say that I do not quite agree with his method of opening the frontal sinus. Dr. Bosworth has touched the right cord when he says that collections of pus in any of these cavities differ in no respect from collections of pus in any other part of the body. In opening the frontal sinus we have to modify our operation in order to respect the appearance of the patient, and we must devise a method which will produce a maximum of drainage with a minimum of disfigurement. I have had the opportunity of opening many frontal sinuses, and of watching the operations of others, and I have come to the conclusion that the old method of opening a distended frontal sinus is wrong. I have seen cases where the opening has been made near the upper and inner angle of the orbit go on month after month, and year after year, with a discharging sinus, leaving a nasty depression, causing some disfigurement, and some degree of hampering of the movement of the eyes. I have myself discarded this operation, both for latent and active empyema. The operation, which I have explained on several occasions before this society, consists of a vertical incision in the median line, going up three inches from the root of the nose ; I then put in a small trephine, which enables one to see both sides, for in some cases it is almost impossible to be certain whether the disease be on the left or right side. I say it does not matter whether your empyema is active or not, you avoid scarring at the orbit, and, above all, you are able at once to see what is contained within the sinus. The important thing, of course, is to make a communication with the nose, and this can always be done by passing a bent probe through the infundibulum. It may be said that this drainage is not sufficient, and that in many cases the opening in the infundibulum gets blocked up. I say, Mr. President, that this method provides for this emergency by the introduction of a large tube through the infundibulum, and bringing it out of the nose. The pressure exercised by this tube upon the lining of the infundibulum keeps the passage patent. You will thus get a passage through your frontal sinus into the nose, and it can be readily washed out, if necessary a dozen times a day, by simply stretching this tube to allow your solution to pass. This method I have adopted in a large number of cases, and I have never failed. I, therefore, beg to recommend it to you.

Dr. DE ROALDES (New Orleans): Concerning the treatment of suppuration of the antrum of Highmore, I think a distinction should be made between the purely operative methods and those resorted to for exploratory and diagnostic purposes. I should like to say that I do not agree with my friend, Dr. Mackenzie, when he states that it is not practical to reach the antrum through its natural opening in the nose. I very seldom resort to any operation on this cavity without first exploring, catheterizing, and washing it through the ostium maxillare. I have failed in only a very few cases ; I do not hesitate then to drive a very small electric burr through the alveolar border, followed by the introduction of a fine silver canula for washing purposes. This pathognomonic injection, with its marked temporary relief, brings such a strong conviction to the patient's

mind and senses that any further operative interference is readily accepted.

Of course, I would never recommend this practice except for exploratory purposes, or for the treatment of cases of acute sinusitis which sometimes accompanies or follows acute rhinitis, grippe, etc. In such cases a complete cure is often perfected in a very few days, after four or five injections have been made. But these are not the intractable cases we have commonly to deal with, of a chronic nature, more or less accompanied with degeneration of the mucous membrane. If not of more than a few months' standing, such cases should be met by a large alveolar opening and full drainage through the mouth, with proper scraping and packing of the cavity, regardless of the possible penetration of food, a question which in my mind deserves very little consideration. If, however, we are dealing with those chronic intractable cases of one or more years' duration, so suggestive of the presence of fungating masses, of large polypoid degeneration, and sometimes of superficial necrosis, especially in the floor of the antrum, the plan is to at once perform a real surgical operation, lay up the patient for a course of two or three weeks so that he cannot continue the treatment himself. The canine fossæ must be widely opened so as to admit of the inspection of the antrum by sight and touch ; all offending growths or diseased tissues removed by a thorough scraping, followed by a careful packing with iodoform or bismuth gauze.

I firmly believe that if this radical procedure was more universally adopted, even at an earlier period in the evolution of chronic sinusitis, we should meet with fewer cases of intractable chronic antral disease. These views I carried out satisfactorily some months ago in a case of nine years' duration, notwithstanding the fact that the patient had undergone at different times three operations at the hands of skilled Continental specialists (one Mickulicz and two alveolar drillings). Not satisfied with that experience, I submitted my patient to a fourth operation, hoping that a larger alveolar trephining and better drainage would improve his condition. My efforts were futile ; I had finally to resort to the more radical interference though the canine fossa, when I found an extensive polypoid degeneration of the mucous membrane with large masses, especially in the direction of the tuberosity over a diseased last molar. The patient was well in the course of five weeks. I mention this case as one in which the operative treatment had been carried on through the nose, a method which, for my part, I will never recommend.

As to the views advocated by Dr. Luc in regard to his mode of treatment of the frontal sinus, I was led a few years ago to adopt the same plan of breaking through the floor of the frontal sinus. The case is instructive enough to deserve a passing mention. The patient presented himself at my hospital clinic with headaches, epiphora, displacement of the left eyeball, diplopia with two small bony growths of the upper and inner part of the orbit ; an intra-nasal examination dispelled all suspicion of suppuration of the frontal sinus. A diagnosis of osteoma was advanced with a possible exostosis of the frontal sinus; and incision was made along the eyebrow and the inner part of the bridge of the nose. Upon chiselling through the bony growths they were found to be made of the raised thinned out

wall of the frontal sinus over-distended by a large accumulation of mucus. We were dealing with a real mucocele of the cavity due to a permanent occlusion of the canal leading into the nostril clearly demonstrated by repeated and ineffectual probing. I had finally to adopt the procedure as suggested by Dr. Luc of breaking forcibly through the lower floor of the sinus, in order to pass a large drainage tube.

The case after a few days was transferred to a clinical assistant for after-treatment, in the course of which the cavity became contaminated, and the mucocele transformed into a regular abscess of the sinus. A secondary operation had to be ultimately performed. I must acknowledge, however, that it took a little over one year to cure the case, with an ugly puckering cicatrix. While I am strongly in favour of the procedure advocated by Dr. Luc to break through the floor of the sinus, in order to obtain free and permanent drainage, I would prefer to adopt the suggestion made by Mr. Collier, of entering the sinus through a linear incision, exposing the flat surface of the frontal in a direction with the root of the nose. This procedure will afford an easier access to either side of the sinus, and minimize the disfigurement.

Dr. DUNDAS GRANT referred to two cases in which complete cure of empyema of the antrum of Highmore had been brought about by the use of Krause's trocar for the purpose of irrigation, followed each time by a thorough blowing out of the residual fluid in the cavity and the insufflation of europhen. These were cases in which the cause of the suppuration was nasal rather than dental, and under such circumstances he was theoretically inclined to advocate intra-nasal treatment. He wished it distinctly to be understood that such cases formed the exception, and that, as a rule, the buccal operation was called for. He did not think that a communication between the mouth and the antrum was so innocuous as was generally supposed. The mouth swarmed with micro-organisms, many of which were pathogenic, or, at all events, pyogenic, and, although the antiseptic properties of healthy nasal mucus might be sufficient to counteract their virulence, the same was not necessarily true of the contents of a diseased antrum. This view was borne out by the improvement which in more than one instance he had seen to follow immediately after the closure of the alveolo-antral fistula.

In empyema of the frontal sinus he had found the use of Hartmann's and of Lichtwitz's curved canulæ of value for diagnostic as well as for therapeutic purposes, and instanced a case in which the apparent obstinacy of antral empyema was cleared up by means of these instruments, the persistent flow of pus after clearance of the antrum being traced to the frontal sinus. On several occasions he had perforated the bulla ethmoidalis, but his treatment of suppuration in the ethmoid cells had chiefly been confined to the removal of polypoid growths and enlargements of the middle turbinated bodies impeding the outflow of the discharges. He considered suppuration of the sphenoidal fairly frequent, and the cavity in most instances accessible by means of a fine canula, such as the one described by Lichtwitz.

Dr. DALY: I should like to ask Dr. Dundas Grant one question

Many of us would like to know how he knew that he was in the sphenoidal sinus with his tubular instrument.

I ask this question because I have never seen any two sphenoidal sinuses alike in any two specimens, and in some instances have been unable to find any opening of the sinus at all even in the dead subject.

Dr. DUNDAS GRANT replied that he employed two methods for introducing a probe or canula into the sphenoidal orifice: (1) the instrument was placed in contact with the posterior margin of the orifice of the anterior naris, and its point was pushed obliquely upwards and backwards across the middle of the visible middle turbinal, between this and the septum, until the front of the sphenoid was felt, when by a little exploration from side to side, and usually a little outwards, an orifice could be felt, through which the point of the probe could generally be passed into an unmistakable cavity; (2) the instrument could be pushed along the floor of the nose to the back of the pharynx, and the point could then be guided upwards to the under surface of the sphenoid, then drawn over it, forwards and upwards, till it got on to the anterior surface, at the upper part of which the foramen was normally to be found. The careful injection of a few drops of boric solution often then dislodged a small quantity of muco-pus, with relief to the headache. He was unable to explain exactly why, in most cases, the feel to the probe in the interior of the sinus was as if the bone was bare or the mucous membrane extremely thin.

In an obstinate case of recurrent polypoid outgrowths, many of which escaped the cold snare as ordinarily employed, a mass of polypoid granulations came away during irrigation, attached to a flat plate of bone apparently from the front wall of the sphenoidal sinus, leaving a very obvious opening into that cavity. The growths had evidently originated from the sphenoid bone, and since then in all cases in which polypoid growths seemed to elude the snare with the opening directed sideways, he had made it a rule to endeavour to seize them with the opening directed backwards and upwards on the assumption that they probably grew from the sphenoid.

Prof. KRAUSE: I must second what Dr. Grant has said. that there is not the slightest doubt that we can go into the sphenoidal sinus without very great difficulties. There is a diagonal line, which leads between the middle turbinated bone and the septum, to the sphenoidal sinus, and if you should take this as a guide I think we are not always sure to reach the ostium of the sphenoidal sinus, but generally in cases of suppuration the bone is so thin that you can enter the sinus without difficulty, even if you will not find the ostium. This is readily apparent if you carefully examine a dried preparation.

Mr. MAYO COLLIER: I agree with Prof. Krause so far that the frontal sinuses frequently have an orifice in common with the anterior ethmoidal cells, but when the sphenoidal cells are shut off they communicate with the posterior ethmoidal cells, thence communicating with the nose, but in many cases there is no distinct vent for the sphenoidal cells.

Prof. KRAUSE: If I have understood Mr. Collier rightly he has said that the sphenoidal sinus has no communication with the nose. It is an

anatomical fact that behind the posterior end of the middle turbinated bone there is an orifice communicating with the sphenoidal sinus, but, as Dr. Dundas Grant has said, it is not always directly in the middle line, and then you cannot enter in this way, but you must break through.

Mr. MAYO COLLIER: As teacher of anatomy at the London Hospital for many years, I must say I cannot agree with Dr. Grant or Prof. Krause in their remarks about a normal communication of the sphenoidal sinus. In many cases the sphenoidal cells have no communication whatever with the upper meatus of the nose, only with the posterior ethmoidal sinus. When it has a communication with the upper meatus of the nose it is frequently quite small and situated vertical, immediately in contiguity with the posterior ethmoidal cells. I agree with Prof. Krause that if one apply force he can enter, but, I say, under no circumstances can you enter a normal sphenoidal sinus with the probe. If the sinus be distended you can with some force break through with a certain degree of impunity, but I reassert the fact that with a normal sinus it is absolutely impossible to enter from the nose.

Dr. DUNDAS GRANT replied to Mr. Mayo Collier, that his remarks applied to what were no doubt diseased sphenoidal sinuses, and he felt sure that Mr. Collier would find cases in his clinic in which he would have no difficulty in finding an entrance.

Mr. BARK: I am one of those who believe in the canine fossa operation for antral empyema. I usually make an opening with the electric trephine, sufficiently large to admit a flanged rubber tube of this size (*tube passed round*), which I have designed for that purpose. This can be done without an anæsthetic, and with very little pain to the patient. In many cases this procedure has been sufficient to ensure a cure.

There are three great advantages one can claim for this method :—

1. Its simplicity and safety.

2. The patient can himself flush out the cavity by compressing the cheeks and lips.

3. If from the presence of polypi, granulations or bony septa the condition is not relieved, you can enlarge the trephine opening, thoroughly examine the maxillary sinus, and remove the cause of the continued suppuration.

I agree with Mr. Lennox Browne that myxomatous granulations frequently occur in the antrum, and in several instances I have found polypoid masses attached to the internal surface of the disc of bone removed by the trephine. In those cases I recommend that the anterior wall of the antrum be removed, and the interior scraped and plugged in the radical manner suggested by Mr. Heath. I am quite satisfied that the treatment of chronic disease of the antrum of Highmore by the removal of the anterior wall is the most rational and surgical procedure we can adopt, and in my hands has proved most satisfactory.

Dr. BRYAN: I think that sphenoidal disease is more readily reached than disease of the ethmoidal cells, although the region is certainly one of the most dangerous regions with which we have to deal. I cannot agree with the remarks of the gentlemen who have spoken about the accessibility of the cells, and the readiness with which they are opened,

and I think certain precautions should be expressed; for though undoubtedly a great many members here have the skill sufficiently to open these cells without danger, some who read the communications may derive a very wrong impression about the ready accessibility of them, and in consequence be led into danger. The ethmoid is one of the most dangerous regions that we as rhinologists have to contend with; the space is very narrow and any undue pressure that may be made by a curette or burr is liable to penetrate the orbital cavity, which may cause an abscess and lead to destruction of an eye. For this reason I think we ought to be very cautious how we express ourselves with regard to the treatment of disease in these cells.

Looking at the sections of the head herewith presented, I noticed an anomaly which I have not often heard referred to, and which will explain the frequency with which antrum disease is mistaken for disease either of the ethmoid cells or of the frontal sinus. The anterior sections show an abnormality in which the frontal sinus communicates with the antrum. However, any inflammation which has its primary origin in the frontal sinus would be very apt to show itself in the antrum, and would explain the origin of so many of these antral diseases which had been treated for such, but which have finally turned out to be sphenoidal or ethmoidal abscesses. I have recently had a case in which all three were involved, and after treating for six months the inflammation had apparently subsided, but one morning on re-syringing the antrum I discovered that it was full of pus. In this case the communication between the frontal sinus, which was very severely inflamed, was a pathological one, but there is a possibility of its being a natural communication, as shown in the photograph, which must not be overlooked.

Dr. SAJOUS (Paris): I wish to allude to a practical point in connection with diseases of the antrum, a point which, I think, has been overlooked in connection with its treatment by fluids—viz., the influence of atmospheric pressure. The ostium maxillare is not always patent, and if we introduce fluid into the cavity under those circumstances it does not come out as easily as it goes in under the influence of the pressure that is exerted by the syringe. A tube being then introduced in such a manner as to slightly extend beyond the opening, a certain amount of fluid thus becomes imprisoned, remains at the bottom, and causes not only irritation, but sometimes inflammation. I make it my duty in these cases to carefully wash out the cavity, and to blow into it with the empty syringe after each washing, to force out any remaining fluid. I think you will find it a good plan to adopt, for it is generally very difficult to ascertain whether the ostium maxillare is patent or not.

Dr. DE ROALDES: Mr. President,—The case reported by Dr. Bryan, of which he exhibits such a beautiful drawing, represents an anomaly so uncommon and puzzling that it deserves more than a passing mention. A similar case came three years ago under my observation. Apparently I was dealing with a chronic maxillary sinusitis of the left side, undoubtedly of dental origin. Although carefully treated by a very large alveolar opening, repeated and thorough scraping followed by plugging with iodoform gauze, the persistence of the suppuration, the fact that

judging from the condition o the packing it was limited to the inner and upper part of the antrum, led me at first to suspect some necrosis. After enlarging the alveolar opening in the direction of the median line, and while searching with a fine and malleable probe for exposed bone, my instrument engaged itself in a canal which, judging by its depth and direction, must lead to the frontal sinus. An attempt to enter through the nose, even the lower part of the naso-frontal canal in its normal position, proved futile, when an injection by means of a fine silver canula following in the antrum the same direction as the probe forced the water through the right nostril. The fact that there was no recurrence of the liquid through the naso-pharynx, the sensation of the patient, with repeated probing and subsequent injections, indicated the existence of an anomaly with pus flowing directly from the left frontal sinus into the antrum. What was never explained to my satisfaction was the absence of pus in the right antrum, being given the existence of such anomaly with a ready communication between the frontal sinuses. The case ended favourably after breaking forcibly through the internal wall of the left antrum, and the removal of the anterior extremity of the middle turbinated body, with direct treatment through the nose of the affected frontal sinus.

As to the causes of suppuration of the antrum of Highmore, I have come long ago to the conclusion that certainly seven-tenths of the abscesses of this cavity are of dental origin. In our southern clinics, where the negroes form a large proportion of our patients, they are found to be much freer of these suppurations. I am strongly of the opinion that such a comparative immunity is due to the well-known fact of their stronger dental system, as compared with the one of the Caucasian race.

Dr. MACINTYRE: I think Dr. Bosworth struck the right note when he said that these cavities ought to be treated upon the same surgical principles as we would treat mischief in any other part of the body. I agree also with Prof. Krause when he says that if we thoroughly applied the general principles of surgery to disease in these cavities there would be a considerable reduction in the size of the literature. While we are all agreed, however, on the general principles there is a great deal to be said about details, because unanimity of opinion does not at present exist on many of the points brought under our notice this morning. For example, I would like to hear a little more about when and where we ought to interfere in chronic mischief in the antrum of Highmore. No doubt a good deal was said about nasal operation, and a little about opening through the canine fossa. This subject has engaged the attention of a great many associations, both general and special, and in one recent discussion a distinguished member of our profession said that the ordinary method of operation has yielded comparatively satisfactory results in his hands, but when he had adopted the operation through the canine fossa he had been disappointed in the result. At the same meeting another gentleman said that he had frequently performed this operation with the most satisfactory results. Clearly, therefore, there is a difference of opinion, and from the present standpoint of treatment, which in our special department is so largely of a surgical nature, I think there is something yet to discuss. If I have erred in the past with

regard to treatment of the antrum of Highmore, it has been in the direction of too conservative surgery. As a rule I open the cavity from the alveolus, and frequently also, after the method of Krause, open the inner wall of the antrum, and I must confess in a large number of cases this treatment has proved very satisfactory.

Many cases, however, do not, and consequently if the mischief remain, a grave responsibility rests upon the surgeon in allowing cases to go on from week to month, and from month to year, without active interference. The experience, therefore, of those who have frequently opened the canine fossa is of the greatest value. While thus advocating more serious methods of treatment, after due consideration one should be very careful in giving a hopeful prognosis, because sometimes conditions are present which cannot be removed by opening the antrum of Highmore.

A patient consulted me lately whose antrum had been opened by another Scotch surgeon some time ago. The patient is now suffering from malignant disease of that side of the upper jaw, and doubtless when the operation was performed this mischief was in an early stage. I saw a case the other day from the west of Scotland, where there was distinct evidence of pus coming through the opening of the antrum, but on looking into the mouth I could see an opening between the cheek and gum, and on passing a probe inside, the diagnosis was again easily made of malignant disease in the region of the upper maxillary. With regard to the remark made by Mr. Collier about entering the frontal sinus, I had the pleasure of seeing one of the cases to which he referred before operation, along with many other Fellows of the Association, and the result subsequently quite proved the advisability of the course which he had suggested. I have also had an opportunity of noting how admirably his suggestion of stretching the drainage tube answers in such cases during the after treatment.

With regard to disease of the sphenoidal sinus, I have not seen many such cases. In one case, however, seen by Dr. Woakes as well as myself, there was no doubt of sphenoidal mischief coexisting with disease in some of the other accessory cavities, and this patient died after a long and serious illness.

The ethmoidal cells are probably, after all, the most interesting to us, for the reason that disease in this region is exceedingly common and very difficult to treat. Dr. Bosworth has very well pointed out the difficulties in removing the pathological condition in such a honeycombed structure as the ethmoidal cells. Nevertheless, they can often be satisfactorily treated by free drainage. I have become accustomed to the use of the electric drill in such conditions, and find the instrument very satisfactory. If we remove all excrescences, and open through the walls so as to establish free communication and drainage, the most satisfactory results may thus be obtained. Nevertheless, disease of the ethmoidal sinuses is one of the most interesting subjects to us because of its frequency, sequelæ and difficulty in treatment, and for that reason I consider it well worthy of greater attention than we have yet given it to-day.

Dr. STOKER: I think it has been abundantly evident from the discuss on we have listened to to-day that there is a diversity of opinion

with regard to the surgical treatment of the accessory cavities of the nose. I rise to make a few suggestions. I am induced to make these remarks by an observation which fell from Dr. Mackenzie with reference to the existence of certain micro-organisms in the nose or in the mouth, which are regarded by some people as being inimical to healing, and against the performance of certain operations. I have recently discovered a new treatment, *i.e.*, treatment of wounds by oxygen, and in pursuance of this treatment several facts of an extraordinary nature have come to light, and one I think bears very strongly on this point. I am sorry to have to introduce legs. It is a case in which the sufferer has an ulcer on either leg; one has been treated by the surgeon with the ordinary antiseptic methods, and the other by oxygen. I regret to say that the ordinary antiseptics are failing, and the wound is not healing, and I am glad to say that the one treated with oxygen is healing. Bacteriological examination has been made by the Clinical Research Association, and the result is that the leg which is not healing is perfectly free from micro-organisms, while the oxygen leg that is healing is full of micro-organisms. It is also abundantly evident that the conditions which admit of treatment in antral disease are not the very best. One case has been quoted which had existed thirteen years, which is a considerable portion of one's life to suffer with such a painful and disagreeable complaint. The whole effect of oxygen on chronic ulcers and unhealthy surfaces has been to induce a healthy form of granulations, and I would suggest that in cases of antral disease a solution of equal parts of oxygen and purified air should be used by being passed into the antrum, and I think the results will be found eminently satisfactory, judging from my experience under other circumstances. I offer that suggestion, for I think in the presence of so many distinguished Continental and American friends it is desirable we should have something new to offer from the old country.

The PRESIDENT: I feel sure that there must be a general consensus of opinion that never before have we listened to a more important discussion than the one that has been before us to-day. I see many here who I know could still contribute much that would add interest to the subject. I feel, however, looking at the clock, and remembering that Dr. Sajous, who is to open the discussion upon laryngeal stenosis, has kindly waited an hour, that we cannot trespass further on his indulgence. It is, therefore, with great regret that I am now obliged to bring this discussion to a close.

DISCUSSION ON LARYNGEAL STENOSIS.

Dr. SAJOUS (Paris). *General Remarks upon the Infra-Glottic Space and its Stenotic Diseases.*

Mr. President and Gentlemen,—Believing that we were to be favoured with a paper on the stenoses of the upper laryngeal cavity, I limited the article that I am to have the honour of presenting to you to the infra-glottic space. I shall afterwards have the pleasure of reading to you a paper by Prof. Massei, of Naples, which I think was to be read by title.

I claim the privilege of reading it before you, in the first place, because my own paper is very short, in the second, because we all have such a high opinion of our friend that it would be but a tribute to take the advantage of an opportunity of bringing his name before you again.

The infra-glottic space has probably received less attention from laryngologists than any part of the upper respiratory tract. As a result, our knowledge of its disorders has been but slightly, if at all, increased since the well-known works of Rokitansky, Czermak, Schroetter, Gerhardt, Catti, and others were published about twenty years ago. This fact is especially to be deplored in connection with the class of diseases briefly submitted to your consideration in this paper.

The infra-glottic lumen may not only be compromised by all the stenotic disorders to which the supra-glottic cavity is exposed, but it presents pathological and symptomatic proclivities of its own. A lesion may give r se to hoarseness and other vocal symptoms in one case, while the same disorder in another case will only occasion dyspnœa. Œdema in this situation being slow to subside, a slight cold while the process of absorption is progressing will suddenly develop the most alarming symptoms, and require tracheotomy.[1] An individual presenting slight dyspnœa during exertion as a unique symptom may all at once, without premonitory warning, become the prey of intense dyspnœa, and pass away unless immediate relief be at hand, the subjective manifestations being such as to suggest remote disorders as the cause of death. A neoplasm may grow insidiously in this situation and cause no alarm until very large, when the unsuspecting patient is suddenly asphyxiated unless tracheotomy afford immediate relief. As may be seen, infra-glottic disorders are singularly treacherous, as far as life is concerned, and it is quite likely that in the great majority of cases they remain unrecognized.

The structure of the infra-glottic tissues and their intimate relationship with those of the larynx proper, readily explain their involvement in the diseases of the latter, and the fact that the infra-glottic region presents disorders of a special type. In the first place, its sub-cricoid or upper portion is remarkable on account of the thickness of the mucous membrane, the submucous connective tissue layer, and the size of the underlying muscle. Fraenkel recently,[2] and very properly, I think, expressed his opinion that the vocal cords should be considered as constituted, not only of the inferior thyro-arytenoid ligament, but also of the subjacent muscular bundle, each cord being thus composed of the entire prismatic mass projecting from the lateral wall of the larynx. This being the case, what might be termed the "vocal promontory" may be said to form the wall of the infra-laryngeal space on each side, the truly laryngeal portion being comparatively very small. This led Masse, of Bordeaux,[3] to state that lesions usually considered as glottic should in reality be considered as subglottic.

As far as exposed surface is concerned, the difference is even greater,

[1] See case reported by Lacoarret in the "Annales de la Polyclinique de Toulouse," Nos. 4 and 5, pp. 60 and 68, 1894.

[2] "Archiv. für Laryngologie and Rhinologie," Bd. 1, Heft 1, p. 250.

[3] "Gazette des Sciences Médicales de Bordeaux," June 10th, 1894.

the width of the upper portion of the prismatic mass, the vocal cords as seen in the mirror, being one-fourth greater than the infra-glottic portion is high. The infra-glottic space, however, is the more protected of the two, and it is much less exposed to traumatic lesions and to the influence of conditions likely to produce irritation by contact than the laryngeal or upper portion of the prismatic mass. Again, the anatomical structure of the latter becomes less complex as its lower or cricoid limit is approached; its physiological and pathological attributes are thus gradually reduced from above downward.

But other conditions—which, I may add, are usually overlooked—tend to increase the morbidity of the infra-glottic region. As the upper limit of the trachea, it receives the brunt of the expiratory current during hemming and coughing, and, the cords being approximated when these acts are performed, dust-laden, mucoid or muco-purulent sputum lies in contact with its surfaces longer perhaps than with any other portion of the tracheo-laryngeal tract. More important, however, in this connection is the peculiarity of its mucous membrane to form creases or longitudinal folds when the cords are not in extreme adduction. Upon the integrity of this crease-forming quality greatly depends the character of the voice. The importance of this fact may readily be appreciated in every-day work. In the treatment of singers, for instance, local applications including the infra-glottic space and calculated to reduce congestion and irregular traction upon the edges of the vocal cords, will be found to control much more readily a case of hoarseness due to an acute, sub-acute or chronic disorder than if the same application is limited to the upper laryngeal cavity. As soon as the regular formation of creases is interfered with, the tension upon the vocal cords becomes excessive or irregular, and there is added to the catarrhal or other anomalous local conditions present one of even greater mechanical moment. In th s lies the clue, it seems to me, to an explanation of the inherent peculiarities attending the differential symptomatology of the region. A perusal of carefully-reported cases will show that an infra-glottic disorder will give rise to hoarseness from the start if it is located over the muscular portion of the "vocal promontory," and that, if it is situated lower down and over the cricoid ring, the first symptom to appear is dyspnœa upon exertion if the disease be one of a stenotic type. The muscular or doughy portion of the infra-glottic region being easily distorted by a local pathological process, we naturally have concomitant distortion of the glottic edge and hoarseness as a result. Over the cricoid ring the absence of loose submucous areolar tissue prevents traction upon the parts above, and a growth of any kind in this region may develop surreptitiously and cause no trouble until the tracheal lumen is all but occluded.

Two important *desiderata* are, it seems to me, suggested by the above remarks: (1) That the infra-glottic region merits serious study. (2) That when the cause of dyspnœa upon exertion cannot with certainty be determined in a given case, the patient should at once be submitted to a careful infra-glottic examination. A diagnosis of asthma could not, with fairness to the patient, be considered as complete now-a-days unless an examination of the nasal cavities be made. The same may be said

of the laryngo-tracheal tract. If an asthmatic is asked where the oppression seems to be the most marked, he will almost invariably point to the infra-glottic region. Of course, we all know the part taken by the lungs in asthma, but the truth remains that infra-glottic asthma has been taken for the classic form, and treated as such to the great detriment and danger of the patient. How death may suddenly be brought on in these cases will be shown later on.

Tumours of the infra-glottic region are thought to be comparatively rare. The truth probably is that unless they coexist with supra-glottic growths, they are seldom brought to the notice of the laryngologist. Even when they are, approximation of the vocal cords during laryngoscopic examination, coupled with the integrity of the voice when the neoplasm is low, may prove completely misleading. Again, the subcordal tract may not easily be visible at first notwithstanding the use of a powerful light and a large laryngoscopic mirror, owing to a peculiar conformation of the larynx, the location of the growth, its shape, and colour, etc. We are thus brought to a position in which we may encounter one of the gravest features of uncertain differential diagnosis. When a diagnosis cannot readily be made in these cases we are likely to suspect, when a certain class of symptoms appear, a syphilitic origin, or under the guidance of other diagnostic features, asthma. In both of these disorders iodide of potassium is our mainstay, and we administer it for diagnostic purposes at least. If a growth be present it affords in itself, as already stated, considerable danger, and may at any moment cause suffocation ; again, the liability of iodide of potassium to induce œdema of the upper portion of the air tract is well known. We thus unconsciously administer what to the patient is probably the most dangerous remedy at our disposal. A case reported by Jonathan Wright, of New York,[1] shows how suddenly asphyxia may thus be induced. The growth was of sufficient size to almost occlude the lumen of the trachea; nevertheless, dyspnœa was only evident during exertion or coughing, no difficulty being experienced when the patient was quiet. The sufferer was admitted into Roosevelt Hospital, and given iodide of potassium in increasing doses for diagnostic purposes. After a few days, signs of iodism began to show themselves, and dyspnœa of so intense a nature suddenly appeared that the patient was only saved by tracheotomy, artificial respiration, and hypodermic stimulation.

There can be no doubt that fatal cases of unrecognized infra-glottic stenosis are occasionally, at least, recorded in the death registers as victims of asthma, heart disease, aneurism, apoplexy, etc. Our specialty as guardian of what might be called the "portal of life," has already done so much to reduce the proportion of such errors that it can well afford to advance one step further. To include the infra-glottic space in all laryngeal examinations as a routine practice would afford increased opportunity to elucidate obscure questions, enable us to enhance our pathological discrimination, and increase the sphere of our remedial powers.

[1] "Journal of the American Medical Association," Sept. 26th, 1891.

I therefore beg to submit the following conclusions :—

1. The infra-glottic space has not received the attention its importance as an inherent portion of the larynx warrants. As a consequence, the part it plays in connection with the diseases of that organ is still insufficiently appreciated, and the disorders to which it is itself liable have not as yet been clearly differentiated. All examinations of the larynx should include the infra-glottic space.

2. The forms of stenosis peculiar to the lower infra-glottic region present features of unusual danger, and symptoms likely to be ascribed to disorders in which iodide of potassium is usually administered.

3. Iodide of potassium greatly increasing the dangers of infra-glottic stenosis, it should not be administered in a case presenting dyspnœa as a symptom unless the non-existence of stenosis be ascertained by infra-laryngoscopic examination, or the causative disease be clearly recognized as independent of the respiratory tract.

4. Preliminary tracheotomy should be performed when iodide of potassium is to be administered during the existence of advanced infra-glottic stenosis.

5. The treatment of laryngeal disorders involving the glottis is more effective when the infra-glottic region is considered as a part of the diseased area.

The Treatment of Chronic Laryngeal Stenosis. By Prof. MASSEI (Naples).

Gentlemen,—The local treatment of chronic constriction of the larynx may be considered from many points of view, in relation to the operation, or consecutive to tracheotomy : the radical or the palliative cure ; a temporary improvement or a complete recovery ; pure laryngeal stenosis or laryngo-tracheal stricture. In order satisfactorily to answer these, as questions, it would involve enumerating, one after another, each different morbid condition which produces a narrowing, and one by one the treatment they severally require.

But time will not permit such a procedure, and one is thus compelled to classify more practically all the different causes leading to the same effect, the therapeutical alleviation of which we desire to study, in order to avoid repetition, and to be more concise.

Firstly, a distinction is necessary between pure laryngeal stenoses and those which may be termed hypoglottic. Both equally claim our attention, not alone from the fact that there are constrictions limited to the hypo glottic tract, but also because the symptoms presented by these cases are frequently those of laryngeal stenosis, and because their treatment is frequently endo-laryngeal. Secondly, a clinical distinction arises between severe and slight stenoses, the former directly dangerous to life, the latter allowing time for suitable treatment. I say clinically because we meet sometimes with cases in which the organic stricture is not far advanced, but where spasm is present these patients suffer considerably, and on account of this additional nervous complication run the risk of asphyxiation. In slight as well as in the severe forms we must separate those morbid conditions capable of complete cure from those which are

not. These premises will, I hope, lighten my task, which I will now commence.

The hypoglottic tract is the seat of predilection of several interesting morbid conditions, namely, syphilis, tubercular growths, rhinoscleroma, etc., also foreign bodies.

Perhaps a casuistic statement will scarcely show the relative frequency of such morbid states; however, from personal observation I am convinced that the true nature of some hypoglottic stenoses is not yet clearly known.

1. Foreign bodies which pass through the larynx in a vertical position may easily change this for a horizontal one, and lodge in the subglottic region, for instance, needles, pins, bones, fishbones, etc.

2. Tubercle may, in rare instances, respect the larynx and attack the subglottic region, either in the form of an infra corditis, or by a destructive infiltration, with subsequent granulations, adhesions and bridle strictures.

3. Chronic inflammation of the subglottic mucosa can give rise by acute exacerbation to severe stenosis, the so-called "chorditis inferior." Anatomically we have to deal with an œdematous infiltration of the thin mucous membrane which continues from the lower surface of the cords to the lateral walls of the windpipe; hence a subcordal swelling diagnosed laryngoscopically during inspiration.

4-5. But considering their frequence, sufficient attention is not devoted to syphilis and rhinoscleroma. These two morbid conditions are apt to produce thin diaphragms in the upper windpipe, with round or elliptical central openings, sometimes so small that air passes with great difficulty. Rhinoscleroma may occur as a primary infection by Frisch's bacillus, and in which the local change, whether a septum or a true diaphragm, may conceal its true character; and more correctly would be termed simply scleroma, or perhaps better, an infectious scleroma of the upper air passages.

6. Finally, I must mention growths, not those arising from the free edges of the vocal cords and hanging into the hypoglottic space, but those arising from their lower aspect, or the lateral walls of the subglottic space.

All these morbid conditions are to be considered similar to the laryngeal, *i.e.*, they are accessible through the larynx, and so will be considered with those laryngeal stenoses about which we have to inquire. Do they allow or not of (endo-laryngeal) treatment *per vias naturales?* The degree of constriction is one of the first things we have to observe before selecting our treatment. Is it slight? If so, is complete recovery possible, obtainable by general treatment or by local treatment, or by a combination of the two? Is it, on the contrary, severe? We must consider whether general treatment can quickly abolish the risks of suffocation, carefully watching the patient, or should an operation be necessary, can it be done without danger *per vias naturales*, and in so satisfactory a way as to completely cure or to minimize the dangers of stenosis? Should this not be possible, we may perform a palliative tracheotomy or

intubation, postponing radical cure until after the danger of suffocation is passed.

I flatter myself, gentlemen, with having condensed into a few words my address on chronic laryngeal stenosis, and that I may be able to better explain my ideas by entering a little into details.

There are, without doubt, cases of laryngeal stenosis, which are capable of cure by general treatment alone, and I must place first amongst these laryngeal syphilis, whose most classic and frequent form is a circumscribed inflammation of the mucous membrane, with or without ulceration, and but little accompanying œdema.

In these cases, according to my long personal experience, which corresponds with that of the first Italian physicians, we prefer the hypodermic administration of corrosive sublimate (this salt showing marked superiority to all others), associated or not with moderate doses of iodide.

Iodine may also exhibit its beneficial effects in rheumatic arthritis of the crico-arytenoid joints; unfortunately, the effects are by no means constant in the chronic forms, and anchylosis or luxation of the arytenoids consequently strictly resemble the same effects of syphilis, tuberculosis or traumatism, which are thus a cause of dangerous and persistent stenosis. Persistent laryngeal œdema as a sequence to the removal of a morbid condition may cause a moderate laryngeal stenosis.

Rest of the organ and iodine often conduce to a complete *restitutio ad integrum*, even without local applications or methodic dilatation.

In chronic inflammation, with a certain amount of narrowing, the local application of astringents by brush, sponge or spray may be successful without other treatment.

Foreign bodies and growths, which reduce the glottic aperture, but not excessively, can be successfully removed by the endo-laryngeal method, especially with the aid of cocaine and all the perfect laryngeal instruments which experience and genius have placed in our hands.

Stenosis produced by a chronic inflammation (simple inflammation or neoplastic) unaffected by operative treatment by forceps, curettes, knives, &c., may be cured by dilatation, however performed, though preferably by metal tubes—intubation.

Briefly, laryngeal stenoses of slight degrees are curable by general remedies or with local applications, or with a laryngeal operation, into details of which it seems superfluous to enter in the presence of such eminent colleagues, or, finally, by dilatation according to the nature of the morbid process and its form.

In well-marked stenosis the responsibility of the practitioner is different, and the consideration which presents itself to his mind before all others is the following: Will the case allow of general treatment, and is it dangerous to perform any endo-laryngeal operation? Usually we believe too firmly in anti-syphilitic treatment, and this excessive faith may cost the life of some patients.

I do not deny that in certain severe cases when tracheotomy was already suggested mercury or iodine has been able to produce marvellous effects, but once more I must insist that when confined to the larynx,

syphilis sometimes requires great care, and something more than general treatment. Perichondritis, indeed, is one of the gravest of its manifestations, inasmuch as thoug of a specific nature the anatomical changes are not such as recede without surgical treatment. Swelling in the most usual position, *i.e.*, the region of the cricoid, or the crico-arytenoid joint, cause marked stenosis, which even not causing urgent symptoms, general treatment is not sufficient to remove the morbid deposits.

Gummatous syphilitic chorditis which I first pointed out some years ago, whose structural changes exactly correspond with those of a subchorditis, although of a specific nature, also is not amenable to general treatment, and not rarely requires surgical treatment. This example which I have selected is sufficient to show, that with a few exceptions, even when specific treatment is able to effect a complete cure, syphilitic laryngeal stenoses require prompt aid, or where the specific cure is attempted they must be carefully watched.

There are, on the other hand, morbid conditions which could be treated by endo-laryngeal means, *e.g.*, a papilloma, but the constriction may be so marked that a lethal spasm may follow any attempt; hence the indication is to open the trachea previously, or to be ready to operate immediately, if necessary.

This is a point of great practical importance—they are common in the early years of life, when both laryngoscopy and endo-laryngeal operations are both difficult. Cases occur to me similar to those recorded in literature, in which the attempt to remove them with forceps caused dangerous spasm, and I was obliged to hurriedly perform tracheotomy; and once I lost my patient (a boy of twelve years) through a severe spasm which occurred half an hour after I had left the hospital, after several successful removals of a diffuse papilloma.

This untoward accident convinced me that, in children who suffer with papillary growths, complicated with severe stenosis, preliminary tracheotomy is the proper course to pursue. These growths may undergo spontaneous cure after a simple tracheotomy, and I was able to remove the canula one year after the tracheotomy, in a boy, aged seven years, who was cured, and with no other treatment.

Narcosis, true, by rendering a child less restless, removes some difficulty in the endo-laryngeal operation, but when we think of the tendency these growths have to recur, to the necessity of many attempts, and to the splendid results of tracheotomy, we cannot deny the great advantages of the latter.

I criticize the suggestion o some (they are general surgeons) who, in these cases, propose thyrotomy or laryngectomy.

Experience teaches us, not only that recurrence is rapid, but that they occasionally disappear spontaneously; also that they are more easily cured with simple treatment only.

When the danger to life obliges us to renounce endo-laryngeal treatment, or to try it, but fully prepared to face the most serious consequences, two courses present themselves, tracheotomy and intubation; when shall one be chosen—when the other? Before answering this question, I shall include for this purpose those cases where endo-laryngeal could be

done, but without permanent benefit to the stenosis—I mean cases of diffuse infiltration, or such morbid conditions (lupus, lepra, tuberculosis, cancer), in which cure is problematic or impossible, and thus shorten my task.

It is not immaterial whether tracheotomy or intubation in this or that case of chronic laryngeal stenosis is not suitable to endo-laryngeal or general treatment.

It depends on (1) the form of the stenosis, and (2) on the nature of the disease giving rise to stricture.

There are morbid conditions of the larynx in which its cavity is so deformed that no tube, even one of the finest, will pass through. Amongst these may be enumerated adhesions, cicatrices, diaphragms, as well as multiple growths and foreign bodies impacted, and occluding the glottis.

Perhaps intubation might be performed after the removal of such obstructions in order to complete dilatation, if necessary, but as a primary operation, in order to render safe an endangered life, tracheotomy is advisable, and this is often the only rational treatment. Of course, it is easy to understand the great value of the laryngoscopic mirror, which enables us to make a mathematical diagnosis of the structure. Foreign bodies in the larynx, or, still more, in the hypoglottic space, firmly impacted, and accompanied by a large amount of œdematous infiltration or severe spasm, furnish no difference or distinction in treatment, and tracheotomy will surely be the simplest procedure for reaching and removing the foreign body.

The nature of the disease is, on the other hand, of no less interest in suggesting to us the right treatment to follow.

I am firmly convinced that intubation will succeed more than tracheotomy in proportion to the curability of the disease. Cancer, tuberculosis, lupus, rhinoscleroma, bilateral paralysis of the posticus indicate tracheotomy, cancer, when laryngectomy can no longer be performed, and the treatment should be simply palliative.

In tuberculosis, great advantage to the general health and the local disease is generally observed. (The operation is, of course, only to be performed if the general conditions and the state of the lungs allow it. Intubation, on the contrary, is only to be performed to save the patient from immediate danger of suffocation.)

In bilateral paralysis of the postici the permanent cause of the obstruction would tie the physician so strictly to the patient, in order to repeat the intubation whenever necessary, that the preference of tracheotomy seems evident to me, the more so when we consider that the operation does not deprive the patient of his voice, which is suppressed by the disease.

I know of cases in which intubation has been preferred, but I do not see the reasons which give it the preference. This applies likewise to lupus, lepra and rhinoscleroma, which are difficult to treat, although I am interested in cases in which, after dividing diaphragms, or freely curetting the hypertrophic tract, subsequent intubation has been per-

formed; but the recurrence of the disease and the necessity of repeated operations justify in many cases the preference of tracheotomy.

In cases not included in this list the practitioner must always have in his mind the laws we have discussed in order to have a sure and rational guide in the selection of the treatment, especially in syphilis, when the morbid condition (perichondritis, for instance, and its sequelæ) gives rise to a permanent stricture, although the general infection be perfectly cured.

I cannot omit to mention that, in chronic laryngeal stenoses after tracheotomy, in the treatment adopted for removal of the canula, intubation presents a method of dilatation which offers the greatest advantages over all previously known, and I have to remark that when a large tube cannot be passed through the constriction we can begin with a common catheter. I have been able to succeed in this way in very obstinate cases.

The size of the tubes may be large; if in children, 5-6 are sufficient for patients from one to twelve years of age; in adults the tubes must be adapted to the development of the larynx and the degree of constriction. Hence the necessity of having at hand tubes with a small head and a large body (for young subjects and women with slightly advanced stenoses), and tubes with a large head and a thin body for well-developed subjects with severe stenoses.

Schmiegelow's modification and other similar tubes are very useful in practice, as are also those with a fenester, as proposed by O'Dwyer for subglottic growths, and particularly for granulations—so frequent a cause of difficulty in removing the canula. A fenester in a tube can also have another advantage, as Lichtwitz pointed out, *i.e.*, in operating on laryngeal growths in children, ensuring free breathing, and the removal of the growth with the forceps when present at the fenester projecting into the metallic cavity.

But I cannot leave this subject without observing—

1. In cases of severe stenosis, in which tracheotomy is clearly indicated, but time would not allow of its performance, temporary intubation, provided the form of the stricture allows of the passage of the tube, will render the operation easier, not only by removing immediate danger of suffocation, but also by fixing the larynx and quieting the circulation.

2. That temporary intubation done in cases of imminent danger of suffocation, providing the operation is possible, would give time for reflection, and later to a more rational treatment, and even tracheotomy, if we renounce intra-laryngeal treatment, and the submitting the patient to a constant supervision by the surgeon, who would be obliged to intubate repeatedly and in haste.

Gentlemen, I have preferred to a long enumeration of operative methods in peculiar cases—methods and instruments well known to all—a general description on this very interesting subject. I fear I have been incomplete, but I believe myself not to have forgotten the chief indications which may be a guide to the practitioner in this difficult

matter of the treatment of chronic laryngeal stenoses. Trusting to your consideration, I hope the discussion will accord to my contribution the merit it deserves.

The PRESIDENT: I have listened with great interest to the paper of Dr. Massei. To Dr. Sajous, I am sure, we are all much indebted for his most able introduction to this discussion. I quite agree with him as to the great importance in these cases of looking to the morbid conditions that may in many instances involve the subglottic region.

There can be no doubt, I think, that chronic inflammatory processes or structural changes there serve to account for some of those instances in which the tracheotomy tube cannot subsequently be dispensed with, notwithstanding the successful removal of all appreciable causes of stenosis in the larynx, and where no tracheal obstruction is visible. I may recall among these perplexing cases the very interesting one reported many years ago by Dr. Trendelenburg, and, looking further back, mention the very important record by Mr. Liston.

Paresis of abduction of the vocal cords through long wearing of the tracheal canula is, of course, a cause well recognized, but with more perfect means of exploring the sublaryngeal region, I think, we may get a still further and a clearer understanding of many others that are yet unexplained.

This subject has been one of special interest to me, and some years ago, when I was devoting a good deal of attention to it, I published the results of some cases of mine, together with a general *résumé* of what had then been done by other operators. My own experience was chiefly in cases of chronic syphilitic stenosis. This class of cases, however, I think, represents a large proportion of those we are more frequently called upon to deal with, and also affords some of the best results. The conclusions, though, that I was led to form at that time I am inclined to maintain still—viz., that in the general run of cases of old standing those amenable to permanent cure by *dilatation* represent the minority. My own experience has been that this has only been curative in strictures of comparatively short duration. In cases of cicatricial narrowing associated with more limited fibrous growth I have had very good results from dilatation after dividing the cicatricial bands. In cases of chronic syphilitic fibroid of the larynx, when the growth is diffuse and accompanied by intense hypertrophy and narrowing, neither splitting of the stricture, dilatation or excision of the growth, has enabled me to remove the tracheal tube permanently, excepting in one case. I would also concur with Dr. Sajous as to the danger that exists of sudden acute swelling or œdema of the larynx that may be caused by the prolonged use of large doses of iodide of potassium; leading to increased dyspnœa. These are to me points of interest, upon which I should be pleased to hear the views of others.

Dr. BRYSON DELAVAN (New York): With regard to the treatment of chronic stenosis, a great advance has been made from the introduction of the O'Dwyer method of intubation. It may be applied in a very wide variety of cases. The method is very simple, easy for the surgeon to carry out, and is so much better tolerated by the patient, that there can

be no question that it is superior to the old way. The toleration of the larynx to the tube is, of course, well known, and this very factor in the treatment of these cases at once places the method decidedly in advance of the older plan. The variety of cases to which intubation is applicable is also very extensive; it is useful, not only in chronic stenosis of various forms situated above the glottic region, but it is admirably calculated to do away with some of the cases of subglottic stenosis. In those interesting cases known as "web" of the larynx a tube has been known to destroy the web without any further dilatation being required. The operation which has sometimes been performed for the removal of a laryngeal web is certainly a very much more severe one than that of simple introduction of the tube—in other words, splitting the thyroid and dissecting out the offending membrane. In the treatment of several of these cases lately reported the web has not even been incised, but the tube has been introduced and a connection effected in that way. Of course, in some of the more severe forms of cicatricial stenosis the larynx may be so disorganized that even the long wing of a tube will not avail in producing the necessary dilatation. In many of these cases even the cicatricial bands may be divided and fragments of tissue removed, and the fine tube then introduced. I think that it is certainly a great advance upon anything we have heretofore had, and there are very few cases in which it is not applicable. There are some cases in which it does not apply, and where incision into the trachea below the glottis is, of course, necessary, but, taking the cases as they come to us, the latter are certainly in the minority.

The PRESIDENT: I hope I was not understood to infer that these cases should be approached with a feeling of hopelessness. For my own part, I have had sufficient cures not to look upon them with despair. As regards intubation, I fully recognize what Dr. Delavan says as to some of the more recent successful results derived by this method, with or without incision. Certainly the more perfect tube offers better opportunities.

Dr. MACINTYRE said: I have had a considerable number of cases of laryngeal stenosis under my care, and I think all such can be divided into two great classes, one in which there is no difficulty in deciding upon a method of treatment, and the other in which there is the greatest difficulty, the result often being of an unsatisfactory nature both to patient and surgeon. The Council has decided to limit this discussion to chronic laryngeal stenosis, and so a large number of cases of stenosis—the result of simple inflammation, or those occurring in the course of diphtheria, or the exanthema—must be excluded. It must be remembered, however, that surgical interference in chronic laryngeal stenosis is often only sought when acute symptoms have supervened, a condition, for example, frequently present in specific disease, and consequently to a limited extent these conditions must be taken into consideration in all treatment coming under the second or less-satisfactory heading. Nay, more, a glance at our literature shows that when a surgeon speaks of acute stenosis he means a chronic ailment in which the symptoms have become urgent, and so to a certain extent some little confusion may arise.

The great majority of cases which I have been called upon to treat have occurred low down in the larynx, either in the region of the true or false cords, and still lower down than that in what we regard as the narrowest of the larynx. On approaching the subglottic region serious and difficult cases also come under observation. So it happens that when looking into a larynx falling under this class we may find cicatricial contraction in one case between the epiglottis and ary-epiglottidean folds, in the other, unilateral contraction; the whole lumen may be encroached upon by inflammatory thickening or a growth of fibrous tissue, or we may have actual growing together of tissues producing an infinite variety of oblique contorted ring-shaped or geometrical figures, with which those accustomed to the use of the laryngeal mirror are quite familiar.

As a natural result of all these with or without ulceration, congenital or acquired, we have the extremely difficult cases to which our distinguished president has paid so much attention, viz., webs, and for which we are so much indebted to him for the famous instrument associated with his name, and so familiar to us all. This is a branch of the question about which we have yet much to learn. A consideration of the causes of stenosis emphasizes in a marked way what I have already stated, viz., that a large proportion of the cases of laryngeal stenosis which come under our care, putting aside minor differences of various operators, present comparatively little difficulty in coming to a conclusion as to the best methods of treatment. For this purpose I would set aside in any remarks which I have to make all consideration of narrowing of the glottis of a traumatic nature, or those due to intra- or extra-laryngeal neoplasm, whether benign or malignant, primary or secondary, or producing mischief directly or by indirect pressure on the nerves, and confine myself to stenosis in chronic cases of constriction. When we have done this we find ourselves face to face with questions of a most difficult nature, a consideration of which, doubtless, induced your Council to elicit as far as possible the knowledge and opinion of the Fellows at this time.

Looking back upon the history of the cases which have come under my own observation a great many of them required the operation of tracheotomy as a matter of expediency, and, secondly, as an aid to further treatment in the case. It must be confessed that giving all due weight to the instruments of such men as Mackenzie, Schroetter, Heryng, O'Dwyer, and many others, and regarding in the most favourable light the many ingenious instruments which have been placed at our disposal, the alleviation has proved in my hands of a very unsatisfactory nature. I have had the privilege in Vienna under Prof. Schroetter, and in Paris under Dr. Gouguenheim, of witnessing demonstrations in which the patient was taught to pass vulcanite tubes of various kinds through the laryngeal orifice, and I have myself been able to train a patient in one instance at least to do this with considerable success. I must say, however, that in no severe and advanced case as yet have I had the satisfaction of carrying the proceedings to such an extent as to enable the patient to dispense with his tracheotomy tube. I do not wish to be misunderstood, and to give an impression that in no case where dilatation was practised have I got rid of the tracheotomy tube, but I say in old and bad cases this has

not been my experience, and in more than one case I have seen a good deal of irritation follow the operation. This difficulty, of course, is in precise accordance with experience in every branch of surgery because, just as we have difficulty with cicatrices elsewhere, so we have in our special branch only infinitely more difficulty from the anatomical position of the cicatrices, granulations, or fibrous tissue, with subsequent contractions.

Sometimes our efforts are rewarded however, and I can recall one case at least of very obstinate specific catarrh, the patient, an officer in the Anchor Line service, in which after dilating with O'Dwyer's tubes for a period of nearly two years the tracheotomy tube could be removed, the voice had returned, and a most successful result was lost simply because the man died of an acute attack of pneumonia during influenza.

Administration of particular remedies, such as iodide of potash, may temporarily accelerate the local conditions, with increase of the stenosis, say from œdema. When we pass to severe measures my experience has been that the difficulties increase with tremendous rapidity, although, after all, they are but of degree, and it is just in these cases that the surgeon is apt now and again to become disheartened, and to include the lesser in the greater, and so miss a successful issue where such might have been obtained. A careful study of such cases emphasizes the general lesson which is being taught in every other domain of surgery, viz., a careful and thorough study of etiology, with a view to prophylaxis at a favourable stage, and the speedy and thorough restoration to function by well-chosen surgical procedure. But while this is the darkest side of the question to take up, the same lesson holds good in our own region as well as in our own branches of surgery, viz., that these intractable and difficult cases, if we exclude such terrible things as those of traumatic origin, are for the most part lesions which come on late in the course of disease, often the result of neglect, at a time when interference was not only possible but likely to be valuable, and consequently I think two lessons are at least to be learned in these cases, viz., the importance of early intra-laryngeal inspection, and vigorous treatment of a local and constitutional nature at the earliest part of the affection, and secondly, that the local measures ought to be perseveringly carried out, and for a considerable period. With regard to the former the surgeon not only has to consider the question of rest, but in many instances the advisability of judicious movement, it may be on the part of the patient, or it may be combined with help from the surgeon. Further, every tendency to thickening, œdema, ulceration, or suspicion of fibroid thickening demands our attention at the very earliest period. One need hardly say further that the majority of these causes, depending as they do upon an affection such as syphilis, can be helped at an early and proper period by prompt constitutional remedies, although even the administration of this last measure has to be watched.

Dr. HILL: I should like to call attention to a little point that has not been mentioned. There is always a good deal of danger when an anæsthetic is administered. I have had a case during the last twelve months in which the patient, a very old man, aged seventy-nine, nearly died on the table, under the administration of ether. Another patient

was under my care for stenosis of the larynx, with a good deal of subglottic thickening, and when he got better he was operated on by a surgeon for fistula. He was given ether, and the spasm was so great that he very nearly died. Of course, had I known that the patient was going to be operated upon, I should have pointed out that ether was a very bad thing to give in any such condition as subglottic thickening. It is a question whether a patient ought to have an anæsthetic, or whether he had not better put up with whatever operative interference is required without one.

Dr. SAJOUS: I have nothing further to add. I would simply ask you to accept the suggestion to include the infra-glottic space within the scope of your future laryngeal examinations. I could have lengthened my paper very much by citing cases in which death was very nearly approached. I merely state this to emphasize the fact that we would not only be doing ourselves justice, but also our duty towards our patients, by including the diseases of the infra-glottic space within the sphere of our serious consideration.

Morning Session, Friday, July 26th.

DISCUSSION ON THE THERAPEUTICS OF DIPHTHERIA WITH SPECIAL REFERENCE TO ANTITOXIN.

Dr. G. SIMS WOODHEAD: Mr. President and Gentlemen,—Although I thank you most heartily for your kind invitation to me to open this discussion, I cannot but feel that you would have better consulted your own interests had you asked one of the members of our profession who has had practical and extended clinical experience of the use of antitoxic serum in cases of diphtheria.

As most of us are aware, this remedy has now received a most extensive trial, and in the majority of cases with admirable results—so admirable that those who do not look for an absolutely specific action in the remedy should be thoroughly satisfied with the success that has already been obtained.

After careful consideration it has appeared to me to be the wiser plan to confine my remarks to a brief statement of those facts that have come under my own observation during the last eight or nine months, and to indicate the lines on which I think further advances may be made in the successful treatment of diphtheria.

I shall not attempt to go categorically through these various points; I shall merely attempt to indicate some of the more important ones, or at any rate those which seem to me to have a special bearing on our knowledge or the acquisition of knowledge in connection with this subject. During the past eight or nine months I have had the opportunity of examining a very large number of specimens (nearly five thousand) taken from over two thousand cases of diphtheria, and as a result, from a somewhat rough analysis of those cases, I have found that in those that were returned as cases of undoubted diphtheria, the long form—I am now repeating what has been already observed, though I shall have some reservations and modifications to make—of the diphtheria bacillus has

almost invariably been present; whilst in the same cases a certain number of what we may speak of as wedge-shaped and irregular forms of diphtheria bacilli have also been found. These long and irregular forms have been present in such numbers that we may say we had practically pure cultures; in a small proportion of the cases, however, we had, in addition, what have been called by some the short form of diphtheria bacillus, by others a pseudo-diphtheria bacillus.

It was found indeed that, in those cases of undoubted diphtheria where there is or has been a distinct membrane, or where there has been very considerable congestion of parts—especially when accompanied by a marked toxic condition, the long forms of bacilli have, almost invariably, been present. There have been comparatively few exceptions to this rule. We have had a few cases in which streptococci and some in which staphylococci only could be found in what appeared to be, at first sight, undoubted cases of diphtheria; but, on going more carefully into the history of these cases, it was found that in almost all of them, though the symptoms were comparatively acute in the first instance, not only was the course of the disease shorter, but recovery took place in a large percentage of the cases. In those cases of diphtheria that have been returned as doubtful, from the clinical point of view, when the cases were first examined—though an opposite diagnosis may have been made at a later period—the long form of diphtheria bacillus has been found in a considerable percentage. Along with this long form of bacillus a number of irregular forms have been met with, but not in such large numbers as where the cases were undoubtedly cases of diphtheria. The short forms, however, were invariably more numerous than in those cases in which we had a very definite and distinct diphtheritic condition. Here also we had a larger proportion of cases in which staphylococci and streptococci only were found, and these cases, as in the first group, ran a comparatively short course; their recovery took place more rapidly and was more perfect than in the other cases. Coming to the convalescent cases, we find that the short form of diphtheria bacillus predominates. I am speaking now of the *short* form of bacillus—not pseudo-bacillus. I do not speak of it as an irregular bacillus, because it is found so very frequently in almost all convalescent cases, and, as we have seen, also in a certain proportion of the doubtful and even of the undoubted cases. In the convalescent cases, too, we find that the long and irregular forms persist for a very considerable time in a certain proportion—a small proportion, perhaps about seven or eight per cent. We have now cases that have been under examination since the middle of February, in which diphtheria bacilli still persist.

These are important points, but I have come to the conclusion that it would be exceedingly unsafe to base any general statement on the differences observed in the number of cases that we have already examined, for, although so many specimens have been examined, it has not been possible in all cases, or even in a large percentage, to test the activity of the bacilli on animals. It has only been possible to take specimens, and, of course, the results up to the present time are comparatively incomplete; for this reason I do not wish to lay down any general statement as to the exact *rôle* of the various forms of diphtheria bacilli in the production of

the membrane or in the formation of toxin. There is, however, one thing we can be absolutely sure of, and that is, taking the diphtheria bacilli in separate groups of cases, we can divide them into bacilli which have a very great power of forming toxic products; into bacilli in which this power is comparatively small; and into diphtheria bacilli in which the power of forming toxic products is almost absent. Moreover, it will be generally agreed, I think, that the long forms certainly have a greater power of forming toxic products than have the shorter ones, and than have most of the irregular forms.

For instance, a tenth of a cubic centimètre of a forty-eight hours' culture of the long form of the diphtheria bacillus will in most cases inevitably cause the death of a guinea-pig of five hundred grammes weight in from twenty to forty-eight hours. From a tenth to a half of any one of these cultures—a forty-eight hours' culture in broth—will almost invariably cause death in from twenty to twenty-four hours. But of the short form of diphtheria bacillus it is often necessary to give a dose of from two to three cubic centimètres in order to produce the toxic symptoms and ultimate death, and in some cases even this quantity is insufficient. The bacillus taken direct, from one case, from the throat, and grown in the usual fashion—that is, in two per cent. peptine broth kept for forty-eight hours in the incubator—would only kill in doses of one-half of a cubic centimètre; but the same bacillus when passed through several animals—that is, two or three guinea-pigs in succession—may eventually give a toxin which will kill in a dose of from a fourth to a tenth, and in some cases even less than that. So that, although the toxin from a primary culture from the throat may only kill in a dose of half a cubic centimètre, the toxin from such bacillus passed through several guinea-pigs or dogs will kill in a dose of from a quarter to a tenth of a centimètre. The fact that you can make your toxin five times as strong by passing the bacillus through several guinea-pigs before making your final cultivation I regard as a most important point. It indicates how, under certain conditions, we ought to be able to trace the gradual rise of virulence in any epidemic of diphtheria, and how under favourable conditions even comparatively non-virulent bacilli may after passage through the throats of several patients become much more toxic, and so gradually more virulent. We find also that the converse holds good, for it has been observed that, although we may keep up the virulence of the diphtheria bacillus by cultivating it in successive generations on consolidated blood serum for a very considerable time, yet when the cultivation is continued in broth the soluble products appear to exert a very definite effect on the bacilli. The bacilli in the broth produce their toxins; the toxins remain in contact with the bacillus for some time; and, if an old growth—say, one of a month old—of the diphtheria bacillus that has been grown in a flask for the purpose of producing toxins is taken back to the blood serum, two things may be noted: first, the diphtheria bacillus does not grow nearly so readily. It has become to a certain extent devitalized, and, instead of appearing as a naked eye growth at the end of sixteen or eighteen hours, you may find that there is no growth visible for twenty-four to forty-eight hours,

or even longer, but after that a pure culture of the diphtheria bacillus, which has almost all the morphological features of the original bacillus, is obtained. If a broth culture is made from this again and animals are inoculated it is found that it has lost a very considerable portion of its toxin-forming power. The bacillus then, even in a very short space of time, may be very decidedly modified, and, just as we may follow the analogous process to the rise of the virulence of an epidemic, a fall after a certain stage may be observed. We may, indeed, gain much information as regards the rise and fall of any diphtheria epidemic by following the modifications of the bacillus in the throats of the patients during the course of the disease in any single epidemic.

This being the case, we must accept the fact that although the diphtheria bacillus is a specific bacillus, and has the power of forming active toxins, it may be placed in such conditions that it is not able to live long in the human subject or, living there, may retain little of its toxin forming power. We may have a gradual immunization of the patient from the presence of a comparatively non-toxin forming bacillus. The patient may become comparatively immune from the fact that he has in his fauces a bacillus of no great toxin forming power, but in which there is still sufficient power to cause certain modifications in the cells of the body, and consequent modifications of the blood serum, and a certain immunity may be obtained even in those cases where there is no distinct development of the disease. We have not to go very far for an analogy, because those of you who have followed the subject of immunity will remember that in the case of anthrax, the saprophytic anthrax which was described by Hueppe and Wood was found to have the power of producing a certain immunity in the lower animals, although in no instance was it possible to set up the anthrax disease by injecting even very large quantities of this bacillus ; so that we have a corresponding condition in another disease which has been thoroughly worked out. We have apparently the same series of conditions holding good in the case of diphtheria bacillus, in relation to the modified diphtheria bacillus (we must speak of it for the present as a modified diphtheria bacillus).

Beyond this difference in the activity of, different bacilli, however, a very great difference in the susceptibility of individuals attacked by the diphtheria bacillus is met with.

For some time past I have been endeavouring to render immune a number of horses in order that we might obtain antitoxin serum from them. These animals differ enormously as regards the amount of toxin that may be introduced without setting up any very great rise of temperature or great local swelling. I have, however, come across two animals in which there seem to be such a very great susceptibility to the action of the diphtheria toxin that it was almost impossible to give small enough doses to produce anything like the reaction that we wished, that is, to produce a reaction that did not give very great discomfort to the animals and send up the temperature, speaking relatively, enormously. To one horse I gave two cubic centimètres of toxin, which killed a guinea-pig in the proportion of one fourth of a cubic centimètre to every five hundred grammes. This caused slight local swelling and a rise of one and

a half degrees of temperature, and the animal was quite well within two days. In another animal the effect was even less: there was very little rise of temperature and less local swelling. This animal had an injection of five cubic centimètres, and the reaction then was not distinctly marked. But we had a bay pony to which I gave half a cubic centimètre, and the swelling and temperature in this case was so considerable that I decided not to subject the animal to another injection for a considerable time. In the meantime I went on with the other animals, and the dose was brought up to about forty cubic centimètres. I then gave the pony a further dose of half a centimètre, but the reaction was again tremendous as compared with that in the other animals, and I did not inject the animal again for some time. Later I again gave it a small dose, but the reaction was still too great, and it was evident that it would be impossible to get this animal immune without subjecting it to some risk, and at the expense of great loss of time.

With regard to the other two cases above mentioned, the dose that they received was within a very short time increased to one hundred and fifty cubic centimètres each. These two animals were comparatively insusceptible to the action of the toxin, the other was exceedingly susceptible. I quite believe that in the latter case it would have been possible to get this animal into an immune condition, but the practical difficulties would be too great, and it does not appear to be advisable to go on with the process in animals which show too marked reaction when only small doses of the toxin are given. This has a very great bearing on the disease as met with in the human subject; it must be noted that, as in the case of other diseases, there is the great difference of susceptibility in individuals, and it must be anticipated, that even in the same outbreak, very different results from the action of bacilli of the same virulence will be met with. This is a point that should be remembered in connection with the use of antitoxic serum as a prophylactic agent, because I believe that, just as in the case of tetanus, we have more to hope for from the prophylactic treatment than we have from the serum treatment, even when resorted to in the early stages of the disease.

In the case of tetanus we know that the amount of serum required to be given after the symptoms have once manifested themselves is from a thousand to ten thousand times as great as the prophylactic dose. If a certain amount of the antitoxic serum is injected before the toxin is introduced a small quantity of the antitoxin will neutralize the action of a comparatively large quantity of the toxin and the animal will recover. If, on the other hand, the toxin is introduced first and is allowed a day or two, as it were, in which to do its work on the tissues before the antitoxin is injected, the proportion of antitoxin to toxin must be reversed. It is now necessary to give a large proportion of the antitoxin to protect the animal against the small proportion of the toxin. In connection with this fact the importance of early diagnosis comes prominently forward. From an examination of a large number of specimens, in from twenty to twenty-five per cent. probably, it is possible, I believe, to make a positive diagnosis immediately, or within half an hour, by simple microscopic examination. This in itself is an important fact, but it is one we some-

times are apt to overlook in our great anxiety to obtain cultures from the throat, and, therefore, it is evident that everyone who has to deal with cases of diphtheria will have to study the method of searching, by means of the microscope, for diphtheria bacilli in the material taken from the throat. Beyond this, it is possible to determine the presence of the bacillus, in from fourteen to eighteen hours, in about ninety per cent. of those cases in which diphtheria bacilli of the long form are present, though there are some cases in which they are missed. They may be missed on the first, second, and sometimes even the third time, to be found on a fourth occasion, and it is quite possible that in some cases they have been missed altogether from the fact that no examination has been made beyond the second or third time. But it is of great importance to know, and I have satisfied myself, having the opportunity of examining such a large number of cases, that one can immediately determine the presence of diphtheria bacilli in about twenty-five per cent. of the cases, and by culture methods in sixteen to eighteen hours in ninety per cent. of those in which they are actually present. Of course, there are cases in which bacilli cannot be found, but in which they must be present, but it is impossible to say in what proportion of cases this occurs; I believe that, as our methods improve, the margin will become smaller and smaller until such cases are almost entirely eliminated.

In connection with the microscopic examination of the diphtheria bacillus, I should like to mention one practical point. Most people use methyl blue as the regular staining reagent. Undoubtedly this has great advantages from the fact that it gives such a definite appearance to the diphtheria bacilli, but against this must be set the fact that all organisms in the preparation are stained very distinctly by the methyl blue. I prefer Gram's method, however, as so many of the organisms which are found in the throat are, by this method, eliminated from our field of view. The diphtheria bacillus is stained distinctly, but there is the further advantage that by washing successively in fresh alcohols exactly the same results may be obtained as when methyl blue is used—that is, a great part of the staining may be washed out, and the characteristic striped appearance obtained. Indeed, Gram's method is so much more useful for diagnostic purposes that I have now entirely given up the use of methyl blue for diagnostic staining purposes. It follows from all this that the clinical diagnosis may be confirmed or modified at an earlier period than was at one time supposed to be possible, and the antitoxin treatment of the disease may be commenced at an early stage, when the prospects of obtaining a successful issue are much greater.

As regards mixed infection in diphtheria. In all the cases where we have had mixed infection the serum does not seem to be so useful as in the cases of pure diphtheria. It is important to bear this in mind, for a special reason. Prof. Roux considered the disease more virulent where he had mixed infection, from the fact that cases treated with serum did not improve so rapidly as those cases in which diphtheria bacilli alone were present. It must be remembered, however, that the antitoxin serum prepared from a diphtheria bacillus can only be specially useful, if our theories are at all to be relied upon, as regards the diphtheria

bacillus and the toxins produced by it. Therefore, if we have a mixed infection, the antitoxin serum may assist in the treatment of the patient as far as the toxins of the diphtheria bacillus are concerned ; but as regards the suppurative or the pyæmic organisms, it can have but a minor effect ; consequently, if Roux's statistics are correct, we should naturally expect that his results, if the serum is specially specifically useful, should be better where the diphtheria bacillus alone is present than in those cases in which the pyæmic organisms are also present. We must not take this as in any sense indicating the severity of the disease, but we should take it rather as indicating the limitations of the power of the antitoxic serum. Other observers say that the most virulent cases are those in which the pure cultivations of the long bacilli are present, and certainly from my own observations this seems to be the case, especially after investigating specimens taken from the throat after death.

There is another point to which I should like to allude, namely—it is said that this "specific" material will cure all cases of diphtheria. Now I think this is a very unfair way of putting the matter. Many enthusiastic people have put antitoxic serum forward as a specific for every case of diphtheria. We know that this cannot be the case, for if the toxic products of the diphtheria bacillus are allowed to act for any length of time on the nerves it is known that certain grave lesions must be the result. Roux, Sidney Martin, and others, have definitely proved this. No, diphtheria antitoxin cannot make these lesions good if once they are allowed to be formed. It can stop any action of the free toxin, it may even stop the disease at such a stage that the patient may recover, but for this very reason we must expect that, for some time to come, those cases that have been treated with diphtheria antitoxin at late stages of the disease must suffer from failure of the heart's action, and that nerve symptoms must supervene in perhaps even a greater number of cases than at present, simply from the fact that a number of patients may recover who did not recover under the old conditions. These patients will have nerve and muscle lesions. We cannot get rid of these by the use of antitoxic serum given in the later stages of the disease when the organic mischief has been done, they must be left to nature ; only nature can restore, and then often imperfectly. This, I think, is an important point, and one which will at some time or other be made much of, and it is one that in the nature of things must be met.

Before I close I should like to give briefly what, so far as I can see, are the main points on which the treatment will turn, and probably those on which discussion will take place. We may—and can—as we know from actual experiment in the laboratory, antagonize the action of certain toxins in the body. This is not theory ; it has been actually and definitely proved by a very large number of workers. If this is done at an early stage of the disease, we have every prospect of effecting a cure in those cases where the amount of toxin absorbed is not so great that the tissues are actually paralysed. Even in the later stages some cases may be pulled round which would not otherwise have recovered. There are cases which will receive sufficient assistance from the antitoxic serum to enable them to turn the corner even after the toxin has been acting for

a considerable length of time on the tissues. It is, however, impossible to make good any organic lesions that have already been set up by the action of the toxin ; the healing of these is not within our power, and must be left entirely to the *vis medicatrix naturæ*. In most cases the patient is rendered more comfortable by the injection of the serum. Whilst the necessity for operation, though rendered less frequent, is not entirely done away with, there seems to be a strong opinion gaining ground—on this point, however, I speak with great reservation before such an assembly —that intubation will take the place of tracheotomy, from the fact that the patient is placed under so much better conditions. On this subject you are all more competent to speak than I can possibly be. The last point is, that prophylactic treatment is now within the range of possibility, and I believe that during next week we shall have placed before us by some of our American friends a number of most remarkable examples of the prophylactic power of antitoxic serum, and the protective power it exerts in a community where diphtheria has broken out, or has for long been a very common disease. In the future of antitoxin I have the fullest confidence. I do not believe that by its agency we shall be able to cure every case of diphtheria, but when the cases are seen and diagnosed at an early stage the action of the toxin on the tissues of the body may be neutralized and prevented by the injection of antitoxin. I am strongly convinced that the serum is harmless when injected even in fairly large doses, and I am satisfied that not only is it possible to diminish the case mortality, but also to bring down the actual number of cases attacked by protecting children who, though exposed to infection, have not as yet contracted the disease.

Mr. LENNOX BROWNE asked Dr. Woodhead whether he could give any statistics as to the numbers treated and the proportion of recoveries under antitoxin.

Dr. WOODHEAD : I do not feel at liberty to give any figures, as the cases were under the care of other men.

Mr. LENNOX BROWNE : Mr. President,—You have kindly intimated to me your desire that I should follow the opener of this discussion from the clinical aspect, and while not hesitating to act on your wish I feel myself at a considerable disadvantage since I could not tell beforehand exactly the line that would be taken ; but I do not feel at any loss to thank Dr. Woodhead for coming here to-day, and for giving us such a very able address. In anything I may say that appears antagonistic to what he has said I desire that my remarks should be looked upon rather as the questions and doubts of a clinician seeking for light from the scientific expert, than as contradictions of any definite and well-ascertained conclusions. I would first venture to refer to what Mr. Jonathan Hutchinson has said in a plea for better clinical research, namely that, with few exceptions, the bacteriologist has told the clinician very little that the latter had not already accepted in practice, or that he had not very good grounds for opposing. Now I really, with the greatest respect, do not see how anything that we have been told to-day with regard to the scientific aspect of this disease and its treatment by antitoxin can be looked upon as very new by an experienced bedside observer.

I am, however, very struck by the fact that Dr. Woodhead does not dogmatize, and in that he differs advantageously from some other scientific experts with whom we are acquainted. For example, he is not very certain that the long bacillus need be absolutely virulent, or that the short form is not always mild. I had a very curious case of a man, who presented all the signs of lacunar tonsillitis. I did not think it was diphtheria from its clinical aspect, but a culture from his throat afforded the finest specimen I have ever seen of the long bacillus in almost absolute purity. He made a very good recovery, without paralysis. Four months later he came back to have enlarged tonsils removed, after which he developed on the wound a pseudo-membrane, which, submitted to bacteriological examination, revealed a short bacillus. Dr. Woodhead saw the case when exhibited before the Pathological Society in this room, and said it was very characteristic of the so-called pseudo-bacillus. Now the curious thing is that in a further sub-cultivation he developed again not a shorter but a longer bacillus. The examinations were made by Dr. Galloway, of the Clinical Research Association, and the result just shows how very little we can dogmatize on the character of the bacillus in regard to its length.

What we have been told as to the varying immunity and susceptibility of horses is very valuable ; for if horses vary, why not human beings ? It seems to me that a remedy of the nature of antitoxic serum depends so much on obviously inconstant elements of personal difference that very great difficulties are offered for securing an accurate standard, an objection which does not apply to the ordinary mineral and vegetable remedies of our pharmacopœia, and, as it appears to me, this uncertainty in strength constitutes one of the greatest difficulties in regard to serum treatment. It does not only depend on the difference in the horses—wherein, by the way, experiments calculated to exclude glanders and tubercle do not exhaust all possible source of blood infection any more than it would in man—it depends to a great extent on the difference in the individuals who prepare the remedy. We know with drugs that we have to depend on the repute of the house that supplies them, and I would suggest that there must be some element of difference in the preparation, which depends—perhaps enormously—on the ability and conscience of the subordinates who are employed in its preparation.

As an example of this, let us consider how variable is experience.

With regard to skin eruptions. I have followed the course of 100 cases treated by serum, in which there were 38 skin eruptions and joint pains. Well, I am told that these skin eruptions and joint pains have no clinical importance. That is as may be, but they are certainly septic in their nature. At the same time, why should this series of 100 have 38 per cent. of these complications, however harmless, and Moizard, of Paris, should get only 14 per cent., and some other observers even less ? There must be something of variability in the material employed to account for these differences. These 100 cases were treated under the most absolutely favourable circumstances of hygiene and *personnel*, whereas, in the "Annals of the Pasteur Institute" of September last, Roux protested against the hygienic conditions of the patients he was

called upon to treat, and he obtained better results. In Buda-Pesth we hear of a mortality prior to antitoxin of 62·5 per cent., and with over 11,000 cases treated in the last six years in the various isolation hospitals of London the mortality has been but 30·3. We read now that in Buda-Pesth they have lowered the mortality from 60 to 25, but those who have followed the "British Medical Journal" epitome of foreign cases will have read that a large number of patients, if admitted late in the course of the disease, are not submitted to serum treatment, because they are considered so hopeless that they would "spoil the statistics."

In our Asylums' Board hospitals every case is registered and is included in the returns, whether the patient dies within ten minutes or ten days of admission, but if the superintendents of these hospitals were permitted to make a similar reduction for patients dying within twenty-four hours after admission, the mortality at one hospital, which in two years was less than 27 per cent. on nearly 2500 cases, would have been reduced to about 21 or 22 per cent. Even in the different Metropolitan Asylums' Board hospitals, where all other circumstances are uniform, there is a variation in the statistics; one superintendent has 40 per cent. of deaths and another has only 26 or 27 per cent. The surroundings of all these hospitals are the same, the food, nursing, the cubic space and the attention are the same. Logically, therefore, the results *must* depend on the variation in excellence of the measures that have hitherto been pursued. In making, then, a comparison under former treatment, and that by antitoxin, you must not take your standard from Buda-Pesth with over 60, nor from Paris with over 50, nor from the Metropolitan Asylums' Board hospital that has had 40 per cent., but you must make it with that hospital that has had the lowest mortality under former methods. Of 100 cases treated at the North-West London Hospital, there were 27 deaths, and the mortality for the year 1894, for 1163 cases, was 27·1.

I had no share in the treatment of these cases, but merely watched them under the *doyen* of medical superintendents, Dr. Gayton, and I found that there was no improvement, either in mortality, or in any other respect, under antitoxin over former remedies. It cannot be long a secret, in fact it is an open secret now, that as a result of the mortality under the antitoxin serum, antitoxin serum has practically ceased to be employed in this hospital since last May.

Now as to the question of early diagnosis, concerning which so strong a point is made in cases to be injected with serum, I should like to know the disease in which the treatment is not more successful if the diagnosis is made early. Naturally, if diphtheria is a disease that kills by its toxic products, the longer the disease has existed before admission the greater is the systemic toxæmia of the patient, and the more difficulty is there of treating that patient successfully whatever the remedy employed.

Dr. Sims Woodhead has definitely laid it down to-day that serum cannot affect organic lesions; that is beyond doubt, but the question is, can it intensify them? I do not believe that serum produces any new disease, and I have been very much misrepresented on that point. Dr. Ruffer has said in the "Medical Annual" for the current year that there is not the slightest ground for my statement that antitoxin produces kidney

mischief. I never said it did, but what I did say was that there is evidence to show that serum injections increase what we may call a normal complication of diphtheria. And I think that when we consider what is the effect on the kidneys of injecting pure blood serum, or of administering albumen in excess in any form, we must agree that such injection puts an extra amount of work on the kidneys. Unfortunately, it is not always possible to get a *post-mortem* examination of the patient without the consent of his friends, who are often influenced against one by ignorant people, and, therefore, out of these 27 deaths at the North-West London Hospital, only nine *post-mortems* were obtained, but in every one of these there was nephritis. Benda (Berlin) has found nephritis in 33 out of 39 cases treated by antitoxin, and I cannot understand why there should be any disposition to ignore the fact that there is a tendency under serum injection to increase of kidney pressure.

With regard to heart failure, I do not quite follow Dr. Woodhead, or similar arguments by others, that because more patients recover, therefore more die of heart failure. At any rate, I cannot make that consistent with the fact that the general condition of the patient is improved if the patient, having recovered from the acute stage under serum, is finally to die of heart failure. An increased tendency to myocarditis has been accounted for in the same way, but I do not know any clinical test by which one can tell that a patient has myocarditis, unless it be exhibited at the side of the *post-mortem* bed rather than that of a ward. We have heard a good deal lately on the subject of experiments on rabbits, and I think, if we take the experiments on rabbits, we shall find that what happens in the rabbit happens in the infant—namely, that serum, whether normal or anti-diphtherial, is prejudicial to the nutrition of the full-grown animal and to the growth of the young. I have not seen that the general condition of the patient is improved by antitoxin; on the contrary, I have been struck by the dreadful anæmia that persists in those children who are treated by antitoxin. From my own observations of the 100 cases referred to, I have come to the conclusion that there is something in the treatment of antitoxin that makes the recovery much harder than in those cases treated by the classical method. We can influence cardio-respiratory failure, we can influence an enormous amount of toxic symptoms by injection of strychnine and by the administration of other pharmacopœial remedies and stimulants. Dr. Woodhead says we can do nothing against these complications, and have to trust to the *vis medicatrix naturæ*, but what I want to know is, if we are to leave these things to nature, where are we going to stop? In some cases we hear that even stimulants are not given.

To conclude, I fear I have not done myself or the subject at all justice, but I would like to say a few words as to statistics. Forty-three cases were treated in the hospital where I was observing the cases. After only twenty-two days of official experiment, some of these had had serum administered only the previous day, or two days before the case-table was drawn up, in which it was published in the "Lancet" and "British Medical Journal" that here was a mortality of 4·6 per cent. by antitoxin, and it was specially noted in the "Lancet" as "the lowest mortality on

record." No patient had been treated for more than twenty-two days. Now, who will say that a patient suffering from diphtheria is out of the wood and is safe on the twenty-second day? Within two or three days of publication of these figures that percentage was doubled, and at the end of four months there were 27 deaths in 100 cases, of which these 43 were a portion. The same thing occurred in the "British Medical Journal." Mr. Ernest Hart published a review of the first 35 cases, with a mortality of 6 per cent., but when the figures rose to 200 the mortality is found to be 22 per cent. I have no doubt that there is some good in the treatment, and I feel confident that as time goes on we shall hear more of it, but we do no service to the cause by ignoring facts and overlooking risks. For my own part, I believe that serum injections are warranted in diseases that have resisted classical methods. Thus they are justified in tetanus, and also perhaps in hydrophobia, but I cannot think that, seeing what can be done by the classical methods for diphtheria, and considering the important element of uncertainty in the serum, we are justified in accepting the treatment at present as the specific remedy which is by many claimed for it. It may, and probably will, be more perfected, but I think at present, at any rate, we ought to suspend our judgment, or, at least, moderate our enthusiasm.

I would like to say one word about the use of antitoxin as a prophylactic. Without any doubt, deaths have occurred under injections for prophylactic purposes, and this being so, I hold that we are not justified in using serum as a preventive.

Dr. WOODHEAD, answering an inquiry by Dr. J. N. Mackenzie, said: As regards your question I should certainly say, from laboratory experience, that I should have no hesitation in recommending the antitoxin serum as a prophylactic against diphtheria. It can be given in very much smaller doses, about a quarter of the dose you would give for the mildest case of diphtheria, and when one comes to sum up the advantages to be gained, especially where children are crowded together, one would be anxious to try almost anything that might prevent the outbreak even in a single case. I am afraid, however, that for some time to come, as has already been remarked, it will be almost impossible to get a sufficient quantity of the serum to carry this out thoroughly; it is still difficult enough to obtain sufficient serum to treat actual cases of diphtheria. I believe some of our American friends may have heard of the cases that have been treated on most elaborate lines—young children in hospitals and foundations—where diphtheria has broken out, in which the most startling results have been obtained as regards the prophylactic use of antitoxin serum.

Dr. J. MACINTYRE: Mr. President and Gentlemen,—In discussing such a subject as the therapeutics of diphtheria, with special reference to antitoxin, one cannot but feel that at this time of day a speaker is placed at considerable disadvantage owing to the fact that comparatively little that is new has recently been evolved, and for the most part all the points of extreme interest have been discussed in nearly every association in this and other countries. There is one advantage, however, and that is as time goes on one is placed in a better position for forming an estimate of the true value

of this therapeutic agent. The subject is one of particular interest to me because, as the Fellows of this Association well know, for a considerable number of years I have been engaged in the study of the etiology of all the acute affections of the nose and throat, and it is now something like four years since I had the privilege of bringing a series of papers before the Association, the object of which was to point out the necessity for careful investigation of the non-pathogenic as well as the pathogenic organisms found in the auro-nasal cavities. During these four years vast strides have been made, and great improvements have taken place in the methods of diagnosis. Moreover, the importance of the subject has been emphasized by the founding of institutes with the object of affording special opportunities by which to arrive at an early diagnosis. Some of the Fellows here present may remember that at the Nottingham meeting of the British Medical Association some years ago I also suggested that such facilities ought to be afforded medical practitioners, and it has been with considerable pleasure that I have noticed the great advances in this direction, not only in England, but particularly in America, where the magnificent work of Drs. Hallock Park and A. L. Beebee will stand as models of scientific work reflecting at the same time considerable credit upon those in charge of the medical departments on the other side of the Atlantic.

In my capacity as editor of the British JOURNAL OF LARYNGOLOGY I have had many opportunities of studying carefully the advantages and disadvantages of this new method of treatment, as shown in the current literature. As is not unusual in these cases, scientific thought seems to be divided into two channels, one in which the new method has been largely vaunted, and another in which it is only fair to say it is viewed less hopefully. Notwithstanding all the hopeful deductions from experiments upon animals, and the preliminary injections upon human subjects by those who were favoured with specimens of the serum, it is only right to say that even now a considerable number of investigators have not yet formed opinions upon the exact value which this new remedy is entitled to claim, and judging from the literature and expressions of individuals at our disposal it is at least fair to say that unanimity of opinion has not been obtained. But it is quite certain that the profession as a whole would not at present accord to this new agent an unqualified reputation as a specific, such as mercury enjoys in syphilis, or even quinine in ague. It is not my intention to dwell upon the clinical experience which has come under my own personal observation, because I feel that a considerable period of time must elapse before anything definite can be said.

Like every other practitioner I have used this new remedy, although not in sufficient numbers to form a basis for dogmatic or definite opinion on the subject.

In the first few cases the results were so good that I was inclined to be exceedingly hopeful. In one of these the child was in grave danger, and the medical attendant with whom I had been called in consultation, to use his own words, said, "My whole experience points to a fatal termination of this case, and speedily." We injected antitoxin very

freely and repeatedly, and twelve hours afterwards I was called upon to perform tracheotomy in what I considered one of the most hopeless cases I ever attempted. This child recovered. A similar experience occurred to me in the practice of my friend, Dr. Anderson Robertson, of Glasgow. Both of these cases were exceedingly grave, and in each tracheotomy had to be performed. A more extensive experience of the remedy, however, did not quite bear out my earlier impressions, and, to put it in a word, my mind is yet open to conviction. If it be true, as Mr. Browne says, that after a careful trial the treatment has been abandoned in one of the Metropolitan Asylums' Board hospitals, we have a very damaging fact placed before us, because I do not suppose that anyone will doubt the serum got a fair trial there. I was delighted this morning to hear the masterly address from Dr. Woodhead, because of the lucid manner in which it was delivered, and also because of its freedom from a certain bias sometimes exhibited by those whose facts come from the pathological laboratory. It sometimes happens that the opinions expressed by pathologists or bacteriologists do not quite coincide with those noticed by clinical observers. In this direction, therefore, I was pleased to hear Dr. Woodhead's views upon mixed cases, because I have never recommended the treatment in such cases where there was not distinct evidence from bacteriological research that we were dealing with pure diphtheria.

In spite of all bacteriological investigation and laboratory research, I think we are entitled to say that, unless the theories of immunity from this agent fit in with clinical observations, the scientific position of the matter is to refuse unqualified assent until the discrepancies have been carefully explained away. For example, assuming that the blood-serum which we are now using is derived from pure cultivation of the Klebs-Loeffler bacillus, and assuming, in the second place, that Behring's theory is true, one would, of course expect that immunization would take place in people affected with a disease due to the presence of Klebs-Loeffler bacillus and its poisons only. But we know that a considerable number of the cases which are brought under our observation not only show Klebs-Loeffler bacillus in cultivation, but some forms of organisms usually associated with the suppurative processes. To this moment I do not see how Behring's work explains away this difficulty, nor can I see yet, from his own theoretical standpoint, how any person can be immunized by the injection of the process of Klebs-Loeffler bacillus when, it may be, that the local and more severe symptoms are not due to such, but to the presence of organisms totally distinct from, and producing a completely different series of clinical phenomena when present in the individual.

First of all, as to the theory involved in Behring's claim, Dr. Hausmann, of Berlin, has very properly pointed out that Behring rests his therapeutics upon the basis that the cure of the infective disease was really a process brought about by self-immunization, but he very significantly adds, "this is a theory, not a fact." Behring believes further that human beings can be immunized by the blood-serum of immunized

animals, and Dr. Hausmann says that experiments made in that direction have not yet been proved.

Now, coming to the advantages, I must say that I have been impressed by the criticism of Mr. Browne when he pointed out that he did not see how anyone could get away from the fact that, both at the bedside and *post-mortem*, we had distinct evidence of mischief turning up in the course of the injection which would not have resulted if the serum had not been injected. The question arises to-day, Are we to use blood-serum in the face of recent statistics? If there be disadvantages, it is only fair to point out where they may exist—for example, they may be intrinsic. I have seen specimens of blood-serum and results in which I have not the slightest doubt the serum was not good. We should be exceedingly careful in not being misled by statistics. Dr. Moizard, of Paris, in a very able paper begins by stating that at his hospital the conditions were so bad in the treatment of diphtheria that the surgeons were on the point of refusing to treat cases. Improvements were made in the administration, and, of course, the results were better from that alone. The tendency is now to send patients earlier into hospital, and the result is our contagious departments will be filled with patients who have really only a milder form of the disease, and, therefore, likely to recover. One is bound to say that the very fact of so much attention being drawn to the cases of early diagnosis statistics will naturally be increased on the right side. However, we cannot get over the fact that, if it be true that in the laboratory and elsewhere they have come to the conclusion that immunity can be obtained, and even if the statistics are not what we would like, surely there is enough said to create a feeling of hope that, by improvements in methods of diagnosis, in methods of preparation, and improvements in adminstration and dosage, some useful practical result will be obtained.

Dr. DE ROALDES: Mr. President,—It is quite refreshing to listen to Mr. Lennox Browne's remarks on the question of the treatment of diphtheria by antitoxin. He is not the only one who maintains that this method is not calculated to supersede the older modes of treatment. We are hearing from some very good men who claim that antitoxin is less effective than generally believed, or even that it does not give much better results than other classical methods of treatment. The experience at the North-Western Hospital, where it is an open secret that the use of the serum has been abandoned, is a subject for serious consideration. As a matter of fact we must thank the observers who boldly point out the desiderata of the new treatment, and who strive to place in relief all possible sources of errors in the statistical returns. Still, I do not see that the facts, statistics and arguments advanced by these gentlemen are sufficient to counteract those brought forward by hundreds of observers from the four corners of the world. I would like to call Mr. Lennox Browne's attention to the report just published, of a medical commission in New Orleans, over which I had the honour to preside, and which was appointed in order to test the merits of antitoxin. He will see that in their experimentation the rules of treatment established by this commission cover some of his objections to the statistics of other observers.

I mean to say that there was no selection of patients, no refusal to inject at any stage of the disease; the cases were treated under ordinary hygienic conditions of general practice as met with in the homes of the poor or of the rich, without trained nurses or the refinements of modern hygiene, which might be claimed as invalidating some of the results obtained with antitoxin.

In most cases all other treatments were, according to the instructions of Dr. Roux, carefully avoided, and the observation sheets made to cover a period of thirty days. The mortality list includes those injected when moribund, and even a case of accidental death. Any practising physician could have his patient injected in consultation with the clinical committee of two, and provided his case had been reported as true diphtheria by the bacteriological department of the Board of Health. Under these conditions the death-rate in 100 cases treated by antitoxin did not exceed 8 per cent. This proportion has been kept up in 150 cases treated subsequently. According to the report of our statistical committee, between 1887 and November, 1894, the total number of cases of diphtheria recorded in New Orleans was 2770, with 1008 deaths—36·39 per cent. In 1894 to November 18th, the recorded cases were 332, and the deaths 106, say 32·22 per cent. From April, 1894, at which time the bacteriological laboratory of the Board of Health was established, the number of cases bacteriologically examined to November 18th was 168, and the deaths 37—22·02 per cent. The number of cases not so examined was 164, and the deaths 69, a mortality of 42·07 per cent. The figure 22·02 per cent., the rate of the cases bacteriologically examined, afforded the fairest comparison with the rate obtained in the 100 cases treated with antitoxin, but even so it showed that its use cut down the prevailing mortality to almost a third, viz., from 22·02 to 8 per cent.

As regards the question of rashes, eruptions of a very mild character have been observed in 12 per cent. of the cases. Concerning the duration of the disease, the shortest time was three days, and the longest thirty-two days. The average of all cases was nine days and eighty hundredths of a day.

In conclusion, I would say that in antitoxin I consider we have a ready means of diminishing the mortality of diphtheria. We must understand, however, that everything is not said on the subject, and that we shall meet with some disappointment. The enthusiasm has been too great at the beginning, but I am convinced that antitoxin has come to stay as a medication of great and powerful effect in the treatment of diphtheria.

Dr. DALY: Mr. President,—While I am very hopeful as to the future of the diphtheria antitoxin serum, I am not of the opinion that we have arrived at that point where we can afford to burn our bridges behind us, so to speak, with reference to the older treatment. I have allowed some of my enthusiastic assistants in the wards of the Western Pennsylvania Hospital at Pittsburg to use the diphtheria antitoxin serum, but I have not permitted them to depend on that exclusively. I have for many years been in the habit of using the calomel treatment pure and simple. This calomel treatment consists in administering—say, to a child of two

or three years old—from two to three grains of calomel every two or three hours, unmixed and untriturated, and simply floated upon a teaspoonful of water; in administering it regularly until you have procured a peculiar condition of the stools, which resemble pea-soup—they are greenish, and after a few evacuations you will find them containing some masses very like the polypi observed in the water troughs by the roadside in the country. The treatment is very simple, but it is quite efficient. When the condition referred to has been procured, then the dose of calomel should not be diminished, but the interval increased. I have been in the habit of practising this treatment for fifteen years. It is not original with me. It was pursued by Dr. Reiter at Pittsburg for twenty or thirty years. He never wrote much upon it, and his colleagues paid little respect to it, because it was said—without truth, however—that he gave calomel for everything, and that he was fond of giving two medicines, calomel and bicarbonate of potash, and what one would not cure the other would. Just before his death I put a lot of my patients on the treatment, for we had then an epidemic of diphtheria at Pittsburg. My results were good, except that I had made the mistake that many others made in those days—not to guard against heart paralysis. I lost some of my patients during convalescence by the mothers taking them up from the crib to carry them about the house and to the windows. There are many points about this treatment that, if gentlemen will only give it a trial, will, I am sure, prove to them that it is not only valuable in its results, but is most charmingly easy in practice. You have no fighting with the child; you simply sprinkle a powder of two or three grains upon a spoonful of water, and it takes it without any trouble at all.

It would not do for us to consider calomel in any sense a poison. I have had so large an experience that I cannot regard it as in any way dangerous. I had just got through one case before coming on ship board—that of a woman, thirty-eight years of age, who had taken five grains of calomel every three hours for twenty-seven days—and, if it is considered in any sense a poison, it must be very like the poison spoken of by the aged seaman, who said it was a poison, but a very slow one.

Dr. WOODHEAD: Mr. President and Gentlemen,—At this late hour I shall certainly not occupy much of your time, but there are one or two points I should like to take up, whilst I should also like to traverse some of the observations that have been made.

The first point that strikes one is that, in taking statistics it is not fair to any method of treatment to select a few special cases, as you must look upon 100 or 150 (unless they are most accurately observed and tabulated), and to argue from these to generalized statements. We now have at our disposal a very large amount of statistics, and as Mr. Lennox Browne pointed out—of course, in favour of the position he defends—it is very easy to be misled by a few statistics, as in those cases mentioned where there was a mortality of only four per cent. In the same way, we are not prepared to assume that they would be able in New Orleans to keep up that mortality percentage of eight, when a larger number of cases comes to be dealt with. We must, of course, take these as isolated facts and as single contributions to a very wide and far-

reaching subject. Now we have, as we have been told, undoubtedly gained much in the way of improved methods of the treatment of cases, simply from the fact that men who have been trained to deal with exact and experimental work have been called upon to treat patients where they considered that the conditions were not favourable for carrying on an experiment, and if the antitoxin serum treatment had done nothing else than to call attention to the great necessity that there is for improvement in the condition of patients a great point has been gained. But the improvement such as one would expect from the mere alteration of surroundings must have been a gradual one, whilst we know that a sharper line of demarcation exists between those treated on the classical method, on the one hand, and those treated by the new method on the other. We are told that we get better results, because we have better conditions; then the better conditions must be put down to those who have been trained in accurate experimental work, and who are not prepared to carry on experiments on a large scale without having such conditions as they think are necessary for treatment. I, for my own part, however, for the reason given above, cannot assume that the whole of the successes are due to these altered conditions. The homes are the same, the general conditions of the patients are the same, and it is only when they come into hospital that we have the altered conditions and the better results. These points, I think, should be borne in mind when we are considering statistics.

The serum treatment cannot be looked upon as supplying everything for the treatment of a patient, and no sane individual, who pretended to be able to treat diphtheria, would assume for a moment that he was not to do everything else in his power, and to take everything from the classical method of treatment—I am not speaking of drugs merely—that had been proved beneficial, and use it along with antitoxin serum. No one would assume for a moment that all other things are to be swept aside simply because something has been found that is undoubtedly useful in the treatment of cases of diphtheria, and, therefore, I should like it to be understood very thoroughly that I do not hold up antitoxin serum as a panacea for all cases of diphtheria. It must be used with discretion, after careful observation of the facts of the case have been found to indicate its use, and only in such cases, and only by such discrimination, are we able to secure good results from this or any other method that is recommended by authorities however eminent.

One other point. In connection with renal changes in cases of diphtheria I for a long period had to make *post-mortem* examinations on a very large number of cases of diphtheria, and the condition of the kidneys (this was before the antitoxin serum treatment was thought of) was so definite that they were always put down as "diphtheria kidney." We recognized the condition of nephritis in these cases of diphtheria, which was apparently due to the attempt of the kidney to excrete the toxin products, and, as a result, we had an inflammation of the kidney which was always exceedingly well marked, even when the clinical symptoms during life had not led the physician to believe that there were any very definite changes in the kidney. It may be pointed out that

Roux and several German observers (who have had similar experience) find that, when albuminuria occurs as the result of the action of toxin on the kidneys, if the antitoxin is pushed the amount of albuminuria is diminished—that is, the toxins are so antagonized that they lose their stimulating power on the kidneys to a very great extent. And, although it is quite true that, under certain conditions, if you inject a large quantity of albumen directly into the blood, or a still larger quantity into the subcutaneous tissues, a certain amount of that albumen will come out through the kidneys, the effect produced on the toxin, and thus directly on the tissues of the kidneys, is so great that less albumen is excreted as the result of the action of the toxin, and there is thus a very great balance in favour of the patient. This is not merely a matter of theory, but is now so well recognized that the antitoxin is given in larger and still larger doses in order to diminish albuminuria.

Mr. Lennox Browne pointed out that a large number of cases of diphtheria are admitted into the hospital to be treated by the various physicians, and which are really not cases of diphtheria. Now that is a very important fact, because these cases, though not really cases of diphtheria, were formerly included by many physicians in their statistics. Taking the cases that come to us for examination (and although some of the men who see them evidently know a case of diphtheria almost the minute the patient is before them), certain hospitals receive cases certified as diphtheria which have really nothing in common with that disease. This condition of things is brought about, not through the medical superintendents at the hospital, but through the medical officer who certified these cases before sending them in. Of course, some people will be careful not to include the non-diphtheritic cases in their statistics, others naturally are not so careful. Every case not one of true diphtheria told in favour of the old method, whilst the new method, on the other hand, must suffer, from the statistical point of view, from the greater accuracy of diagnosis obtainable by bacteriological examination.

When speaking of the rise of virulence, I was not under the impression that we were teaching clinicians anything; I was only indicating that there might be some possible explanation of this rise and fall which no clinicians have yet been able to give. We have been told that it occurs in a very large number of diseases, but the thing is to find an explanation, and if such explanation can be found, it seems to me that the finding of a cure comes appreciably nearer. As regards the difference in the strength of the serum: there is no doubt that antitoxic serum may differ greatly as it is taken from different horses, but if twelve grains of any substance is to be given it may be given in twelve or in six ounces of water. It is possible to so measure the strength of any serum by noting its effects when given with certain doses of toxin of a definite power, that we are able to say whether twenty, fifteen, or ten cubic centimètres should be given. The administration of this substance is not the indefinite process that Mr. Lennox Browne appears to believe. It is possible to determine with the greatest nicety the strength of the antitoxin, or rather its power of antagonizing any definite dose of toxin in animals, and, of course, if you can graduate the strength of the serum the required dose is readily calculable. We have got into a way of saying that twenty cubic

centimètres are necessary, but most of those who are giving out the various antitoxins are quoting the strength, and it is then left to the man using the serum to decide how much he must give in any individual case. I should have liked to have said something more, but I will just state that so far as I know we have from fifty to sixty per cent. of those cases of undoubted diphtheria in which the long bacillus is present, which are pure cases and have *practically* no other organisms in the throat. Of course, in almost every case we can find a few organisms, even streptococci and staphylococci—you cannot take anything from the mouth without finding a number—but so few that they are comparatively unimportant, and may be left out of consideration. Of course, on the other hand, staphylococci and streptococci are sometimes so numerous that it is almost impossible to find the diphtheria bacilli even when present. Between these two groups are what may be termed mixed cases, which are really less numerous than many suppose. In conclusion, gentlemen, I must thank you most heartily for the exceedingly kind way in which you have received my somewhat disjointed and very incomplete remarks.

Mr. LENNOX BROWNE asked Mr. Woodhead whether he could give any statistics as to the proportion of pure diphtheria to mixed.

Dr. WOODHEAD, in reply, said about sixty per cent. were pure diphtheria.

Mr. LENNOX BROWNE : That appears a very high estimate, but before this discussion is finally closed I should like to move a vote of thanks to Dr. Woodhead, and that will give me the opportunity of making one more remark about the employment of adjuvant measures in these cases. For example, in those that were brought here last December by Drs. Washbourne and Goodall, it was distinctly stated that no other treatment except syringing the mouth with warm water was used, and that, except in cases of extreme weakness, no stimulant was given. It is also clearly understood that Roux is exceedingly careful to limit his methods to the mildest antiseptic irrigations, and that he does not use strychnine injections and stimulants in only small quantities while pursuing the antitoxin treatment.

The PRESIDENT : I am sure you will agree with me that the vote of thanks to Dr. Woodhead for the valuable paper he has favoured us with, moved by Mr. Lennox Browne, seconded by Dr. Warden, need not be *formally* put to the meeting, for there can be no dissentient voice.

Afternoon Session.—Mr. MAYO COLLIER, *Vice-President, in the Chair.*

ON THE SURGICAL TREATMENT OF LARYNGEAL TUBERCULOSIS.

By Prof. Dr. H. KRAUSE (Berlin).

Gentlemen,—Before entering upon my subject I should like to express a few words of hearty thanks for the kind invitation of the President and the Council of this Association to open the discussion on the surgical treatment of laryngeal tuberculosis. I am all the more pleased with this invitation, as I know England only too well to be one of the countries from which the rational treatment of tubercular diseases has originated.

Although we have observed the laborious and unceasing work of those who have for a decennium been aiming at the cure of laryngeal tuberculosis, and who have for this purpose recommended some successful methods, we, nevertheless, find opposed to them at the present moment a number of those who do not wish to acknowledge the success of this treatment, or only acknowledge it with great reserve. However, these opposers do not wish to deny the curability of tubercular destructions, but, principally, they say that this treatment cannot be admitted in general for tubercular affections, but only in certain suitable cases. This alone is a progress which must not be despised, when one thinks of the great difficulties with which therapeutic questions have to battle—a progress has not been gained too heavily with the work of ten years. This change has not taken place without the influence of a general direction taken by our modern medical science. Albert Ruault, a French laryngologist, who is endeavouring to introduce a new remedy (the "Phénol sulphoriciné") for the treatment of laryngeal tuberculosis, a remedy which, it must be admitted, is of similar but slower effect than lactic acid, has taken as a motto for the work upon his remedy a remark of Bouchard about the *surgical* tendency of modern medicine, which is :—"Le départ "des maladies entre la médecine et la chirurgie, tel qu'on le concevait "autrefois, subit une modification profonde . . . . Le domaine de la "chirurgie s'étend, parceque l'antisepsie a presque supprimé les limites "de son action, parcequ'elle arrive à porter partout le remède sur la siège "du mal. Tout ce qu'il devient possible de traiter localement devient "chirurgical . . . . Toutes les fois qu'on peut faire le traitement local, on "a chance de guérir ce qui ne guérissait pas." This remark of Bouchard can also be used for our subject.

Looking back upon the year 1885, when I demonstrated on a *post-mortem* larynx in the Berlin Medical Society the first cicatrices of tubercular ulcerations produced by lactic acid—and Virchow, notwithstanding the opposition of the *mort* laryngologists, acknowledged the result, and said that it surprised and confirmed him in the belief that cicatrization of tubercular affections of the laryngeal mucous membrane is quite as possible as that which he remembers to have seen on the intestinal mucous membrane—then I cannot doubt that also the question of to-day, *i.e.*, the surgical treatment of laryngeal tuberculosis, will be resolved favourably. I am all the more sure of this after having looked through the discussion which has taken place concerning the experiences in lactic acid treatment at the Naturforscher-Versammlung, in 1886. It will be remembered that I had recommended in 1885 the use of lactic acid for the cure of tubercular ulceration, and shortly after this I had the pleasure of having been seconded in my recommendation of this remedy by Messrs. Jelinek, Heryng, and M. Schmidt.

In the above-mentioned assembly the majority was inclined to confirm my experiences, but, on the other hand, there were a number of important adversaries. At present no opposition worth mentioning against the lactic acid treatment is to be found. It was already in my first publication that, with the idea of making lactic acid act upon deep-lying infiltrations, I recommended scarifications and incisions into the infiltrated

tissue. But a systematic action in this question was only arrived at, as Heryng showed that it is not only allowed but even necessary according to surgical principles to excise and remove the tubercular tissue, all the more when by the infiltrations or granulating ulcers the most important body functions are impaired or made impossible. Will a modern physician wonder at our scraping out, down to the wholesome tissue, a tubercular ulceration situated in the skin or in the oral mucous membrane; if we scrape or burn or excise tubercular fungosities of a joint; if we split a fistula ani or scrape it out and try to bring it to cicatrization? Can there be any sensible reason for preventing the transference of this proceeding to the larynx? I myself do not think so, especially as the modern laryngeal technique has greatly diminished the difficulties of such operations, and makes the idea superfluous that there could be laryngoscopists who object to such operations because of their small knowledge of this technique. Therefore I cannot clearly understand the objection recently made by Jonathan Wright,[1] which is :—"Most of us probably "have the wish to see Heryng and Krause at work with their cutting "curettes, to observe how these authors distinguish what is diseased in "the larynx and what is not, and, above all, how they assure themselves "whether they have removed all affected parts." I have often had the pleasure of demonstrating, not only for German, but also for English, French, American, Russian, and other physicians, how accurately one can perform such operations upon the larynx; and I do not doubt that if Jonathan Wright were present at a surgical operation made by an expert's hand he would be convinced not only as to the possibility, but also as to the success of this treatment.

Concerning *the choice* of the cases, I cannot advise the extreme carefulness demanded from many sides. We can really give ease with this treatment even in the far advanced or most desperate cases, and I cannot consent to the opinion that in cases of high fever and decrepitude one should leave the patient to his sufferings and pains, believing that through giving cocaine and morphia one has done one's duty; for, even in hopeless cases, where with such treatment we can unite no thoughts of cure, nevertheless professional experience and duty points to measures which give ease and consolation, all the more as the surgeon feels himself in his right even in the performance of operations in incurable cases or of hysteria.

But with our patients it is even possible, in the latter days of life, to often relieve or remove the most tormenting and depressing difficulties of swallowing by the excision of a particularly painful infiltration upon the epiglottis or one of the ary-epiglottic folds, and to throw a small ray of hope upon the hours of suffering of the despondent dying patient. To give an example of such cases I should like to bring forward the case of a physician's wife, who was brought to me a few months ago by her husband in an almost dying condition. She was in a state of most advanced pulmonary and laryngeal phthisis, but she suffered mostly through difficulty of swallowing, so that she believed she would die of starvation. I found here a perfectly diffused infiltration and ulcerative

[1] "Internat. Centralblatt," May, 1895.

destruction of almost the entire laryngeal mucous membrane, which, by the enormous swelling of the ary-epiglottic and pharyngo-epiglottic folds, made swallowing impossible. Without any hope of being able to preserve the life of the patient by the operation, I cut considerable pieces out of both folds. Through this the passage became free for swallowing, and the courage of the patient went up. Strange to say, notwithstanding the continuous progress of the pulmonary disease, the larynx became better by degrees, without doubt through the operation, so that up to the time of her death she had no more trouble from the larynx. Such cases show that it is quite impossible to make the rule general, that far advanced pulmonary affections forbid operations on the larynx.

But it must be remarked that the principal value of this treatment lies in such cases as we can save. At this moment it would be a temptation to bring forward certain cases of very satisfactory and lasting cure; but I must deny myself this pleasure, because of the number of publications made by others and myself, and because it would not be right of me to take up so much of your time. Looking back upon the great number of cures of advanced cases which have lasted for years or altogether, I feel greatly satisfied with our modern laryngeal treatment, compared with that of the time when tubercular affections were looked upon as a "*noli me tangere*." By personal experience I can say that at that period nothing saddened me more than our helplessness in the face of the long sufferings of these miserable creatures.

Concerning *the performance of the operation* there is not much new information to be given. Our aim must be to get out the diseased tissue down to the wholesome one. Aiming at this, we can scarcely ever hope to finish such an operation at one sitting. One attacks, first of all, the most diseased, and for nutrition or respiration the most dangerous, parts. If matters go on favourably, the infiltration even of unoperated parts soon decreases. Then the affected parts below are to be seen more plainly, and to be reached by the instrument with greater ease. Now we get at these, and so we cut out, advancing slowly and carefully by degrees, the whole diseased tissue, and leave well granulating surfaces whose cicatrization can go on now without hindrance. My opinion is this—that we need not leave out from the operation any diseased part of the larynx. Formerly I was sometimes timid to cut through the epiglottis, or the arytenoid cartilage. But having observed that the cartilages cicatrized perfectly well also, I now treat them upon the same principle as the other parts. It is, as a rule, surprising to see how well the tubercular tissue cicatrizes after operation, although we must admit that there are cases in which the degenerated tissue, as it is mentioned above, cannot be brought to cicatrize or be got away. These are, then, the hopeless cases in which the organism has lost its resistance to the excessive formation of pathological vegetations. Such cases characterize themselves as hopeless at the first operation, because the wounds made do not show any tendency to the production of wholesome cicatricial tissue. To advance and to accelerate the formation of this after the curettage I always use the lactic acid. Neither antiseptic nor other remedies have done so much good as this acid, although I have tried

them all without the least prejudice. Infiltrations of small size disappear after operation, often without the need of other remedies.

Having to do with cases which cicatrize satisfactorily from the beginning, we must not confine the operation within too narrow limits if we wish to prevent relapses. It is often surprising to see how deep the infiltrations go. It often happens that in the perspective laryngoscopical picture we cannot see the extension of the tubercular depôts, and only after the first excision does it becomes evident that the infiltrations go further into the tissue than we thought in the beginning. Here we must not be afraid to operate as deeply as we find diseased tissue.

It is nothing new for those who have performed such operations to note how well, as a rule, the patient withstands them. We seldom find after operation symptoms of very high fever or other troubles of the general health, except now and then a light intoxication caused by cocaine. The rule is that they feel better and in higher spirits in consequence of the easier swallowing and the increased nutrition.

Now, as regards laryngeal *relapses:* this question we cannot decide according to the general experiences which we possess about the course of pulmonary tuberculosis. This difference is caused by our surgical treatment, which is, up to now, not usual in cases of pulmonary tuberculosis. Where strength is well preserved and tendency to cicatrization present, we obtain lasting results as often as in the lungs. But I must say that I have watched many laryngeal cures which have lasted until death, whilst the process in the lungs progressed continuously. Thus died, a few weeks ago, a patient of mine from a pulmonary hæmorrhage in far advanced pulmonary phthisis, whose laryngeal tuberculosis I had cured six years ago, and, again, a patient whose larynx I cured in 1888 is now under my attendance in a very bad pulmonary condition. Of course, we find many cases where, in spite of all our pains, we cannot prevent quickly-following relapses, but, as a rule, we must say that, after the introduction of the surgical treatment, laryngeal relapses are rarer than pulmonary ones.

J. W. GLEITSMANN, M.D. (New York).—*Surgical Treatment of Laryngeal Tuberculosis.*

Surgical treatment of laryngeal tuberculosis proper—viz., curettement with single or double curettes—has not received the attention, and has not as many followers in the United States as it has in Europe. Preference is largely given to milder methods of treatment; and, although the advocates of surgical measures meet with due consideration and appreciation of their work, curettement has not yet gained a firm foothold among the laryngologists abroad. I shall not venture to enter at length into the reasons for this seeming indifference or aversion, but the disinclination does certainly not arise from a want of recognition of the excellent work done by others; nor is it due to tardinesss to adopt advances made in science on this side of the ocean, proofs for which are not wanting. It is also not timidity on the part of the operator, a statement which I do not think necessary to substantiate in the face of the brilliant achievements surgery has accomplished in the United States. But I may briefly

mention two reasons which, although given only as my personal opinion, I heard stated in conversation with my colleagues. A great number of the latter are averse to harsh measures, and dislike to inflict pain and discomfort on their patients; others, again, with better claims, point to the small percentage of patients cured by curettement. To the former class of our colleagues we cannot deny the right to treat their patients with milder means, as long as they can prove that the remedies used improve or cure a certain number of patients. To the latter we must endeavour to show that curettement, in properly selected cases, will yield better results than other methods of treatment.

Curettement is so important a measure, is a proceeding so opposite to views hitherto held, that it is not surprising that, when once adopted by an operator, he is carried away by enthusiasm, and is tempted to extend the field of his operations to cases which had fared better with another method of treatment. By this remark I do not wish to insinuate that a careful selection of patients had not been made by the advocates of curettement, but it is my belief that the operation will win more adherents among the profession when we exclude all unsuitable cases; further, when we bestow the most painstaking attention to the after-treatment; and lastly, when we give full consideration and care to general hygienic and dietetic treatment of the patients.

Laryngeal tuberculosis being a disease of the gravest order, and the indications for curettement being limited, it necessarily follows that the number of cures resulting from it will remain small for some time to come. We often hear of the excellency of some new remedy for tuberculosis and of the cures effected by it, but I have yet to read a plain statement in figures of how many patients of the number treated have remained well after a reasonable length of time. In a recent discussion on this subject I remarked that not only statistics of cures of laryngeal but also of pulmonary tuberculosis are difficult to find in the literature. A few physicians and a few health resorts have published the results of treatment of their pulmonary patients. The references of laryngeal tuberculosis are still less satisfactory. My illustrious colleague, Dr. Heryng, had the courage to publish the records of his results by curettement, and has by his figures given a weapon into the hands of the opponents of this treatment, who are inclined to believe that the number of cases is too small to merit any serious consideration. As stated before, no publication of the results by other methods has come under my notice, and as long as such reports are not forthcoming comparisons of the value of the different measures adopted will be misleading. But, if statements of the condition of patients after a lapse of several years should be published later on, I am convinced that the results of curettement will not need to fear a comparative test, and will prove at least equal, if not superior, to other methods of treatment.

Although curettement, as the most modern and radical treatment of laryngeal tuberculosis, deserves our greatest attention, surgical treatment of this affection comprises several other procedures, which must be mentioned when reviewing this subject. Endo-laryngeal measures are—(1) incisions; (2) curettement; (3) submucous injections; (4) electrolysis;

(5) galvano-cautery. Extra-laryngeal operations are laryngotomy, extirpation of the larynx, and tracheotomy. Finally, also intubation has been performed in laryngeal tuberculosis.

I have collected for another occasion the literature on these different subjects, as far as it was accessible to me, and, as I thought it might be of interest to some Fellows of the Association, I brought a copy of the references with me. You will see that it was an Englishman, William Marcet, who made the first attempt at surgical treatment, by puncturing tuberculous infiltrations as early as 1869, but who did not persist in his experiments. I found, further, that a Scotchman, P. H. Watson, of Edinburgh, made the first extirpation of the larynx for syphilitic stenosis. The first tracheotomy on account of laryngeal tuberculosis was made by the Frenchman, Valleix, in 1834. Extirpations of the larynx for tuberculosis were made fifteen times ; eight total, seven partial ones. Among them, three for supposed carcinoma ; two for lupus.

In a paper read last month before the American Laryngological Association I endeavoured to analyze and to refute the objection generally raised against curettement in laryngeal tuberculosis. I may be permitted to refer here briefly to some of the more important points stated in the aforesaid paper. It is not claimed by the operators who practise curettement that they will cure thereby a concomitant pulmonary complication, nor that they can prevent relapses, drawbacks which curettement has in common with other forms of laryngeal treatment. But it cannot well be denied that if by curetting we improve or cure the laryngeal lesion, the patient will have a better chance to fight his pulmonary affection than when he suffers from both combined. Curettement, further, is in my opinion the quickest and most effective proceeding to relieve the distressing dysphagia resulting from tubercular infiltration of the arytenoid region. The pain of the operation can almost always be entirely subdued by applications of cocaine—either by applications with the cotton-carrier, or by submucous injections ; and the wound, as a rule, heals rapidly under appropriate after-treatment. The resulting relief from dysphagia is of the utmost importance, as the patient is then enabled to again take proper nourishment, which is one of the most essential features in the treatment.

The limitations as to suitable cases adapted for curettement, are no valid reasons against its recommendation as a surgical measure. For almost all operations a line has to be drawn, beyond which it is not safe to operate, but this is no argument against an operation being justifiable in appropriate cases. By curetting a torpid tubercular ulcer, by excising tubercular infiltration in the larynx, we adopt sound principles of surgery, and follow the example of the surgeon who excises tubercular glands, tubercular joints, etc. The disadvantages under which the laryngologist labours, the greater inaccessibility of the parts, the greater proclivity of relapses resulting therefrom, the greater difficulty of manipulation, do not detract from the value of curettement as a proper operative measure, but only make a greater demand upon the skill, perseverance and circumspection of the operator.

I think it is not in place for me to speak of the indications and the

technique of the operation, as I anticipated that Dr. Heryng would treat these two subjects. I also have nothing to say in addition to that which has already appeared in print. I only beg to draw your attention once more to the propriety of a careful selection of the cases for this treatment. Although it is well-nigh apparent from the foregoing that I am a strong advocate of curettement, I have declined to operate in more than one case sent to my office for this purpose. I remember especially one patient who returned from a health resort with the avowed intention to have surgical treatment applied to his larynx. The upper lobes of both lungs were seriously affected; he suffered from hectic fever, and the infiltration of the left arytenoid region and ary-epiglottic fold was so extensive that the patient had scarcely been able to take any nourishment for several weeks past. The right arytenoid cartilage was also somewhat tumefied; there was complete aphonia, but no dyspnœa. It was impossible to remove the enormous tumour by curettement; besides such a step seemed to be unjustifiable, considering the patient's general dilapidated condition. Submucous injections of lactic acid were made, and in the beginning with the most happy result; but ultimately dysphagia set in again, and ten days later the completely necrosed arytenoid cartilage, with Santorini's cartilage attached to it, was expectorated by the patient, who died one week thereafter.

I never experienced any special difficulty in the performance of curettement with Heryng-Krause's double curettes, but found it advantageous in some cases to employ slightly larger curettes, enabling me to remove at one stroke a greater amount of diseased tissue.

I also refrain from speaking of the results of curettement obtained by others, and shall only briefly allude to my personal experience. In the face of the large figures given by Heryng, Gouguenheim, and Krause—a total of four hundred and fifty-five patients—I feel somewhat embarrassed on account of the small number of my own cases, viz., twelve; having obtained Heryng's double curettes only about one year ago. Of these twelve patients three are dead, five are in *statu quo*, or have lost the improvement previously gained, and the balance of four are without recurrence of laryngeal disease from six to ten months; one of the latter number had affection of the posterior laryngeal wall, another of the ventricular band, and two of the arytenoid region.

But it is a source of satisfaction to me to be able to refer to one patient who is an analogue to Dr. Heryng's case of Mrs. Goldschall, and whom I treated and cured seven years ago with single curettes, galvanocautery and lactic acid. As the case has been mentioned in the medical press on several occasions, I shall confine myself to the statement that the patient had primary tuberculosis of the pharynx and larynx: the lesion, beginning at the base of the tongue, ultimately implicated the left tonsil, the soft palate, the whole lingual surface of the epiglottis and the left ary-epiglottic fold. After five months of persistent and energetic treatment the ulcers healed and cicatrized, and with the exception of a slight relapse during the following winter the patient has remained in excellent health to the present day.

I cannot conclude my remarks without some reference to the work

done by my townsman, Dr. Chappell. The doctor has treated patients with laryngeal tuberculosis, during the last year, with creosote solutions locally, as well as with submucous injections of creosote in an oily solution, and has devised a syringe for the latter application, which I have the pleasure to show you for inspection.

I have no personal experience with this method, having so far been satisfied with the effect of submucous injections of lactic acid ; but, if the improvement reported and observed at the examination of his patients be a lasting one, this mode of treatment will certainly deserve a more extended trial to determine definitely its merits.

The Technique of the Surgical Treatment of Laryngeal Phthisis. By Dr. THEODOR HERYNG (Warsaw).

Gentlemen,—When two months ago the President and Council of the British Laryngological Society made the honourable proposition to me to open the discussion on the surgical treatment of tuberculosis of the larynx in the seventh annual assembly, I found myself compelled, on account of my ignorance of the English language, to ask leave to speak French. Thanks to the liberality of the President and the Council, I have the great honour of contributing here to the enlightenment of a question with which I have now been for eight years constantly occupied, and the further development of which has rapidly been attained by the collaboration of many colleagues. The greatest number of the points requiring explanation and elucidation have been already settled at the International Congress of Rome in 1894. Of eighteen colleagues taking part in the discussion, fifteen have pleaded for the necessity of a surgical intervention in certain cases of phthisis of the larynx, founded on personal experience. At Rome, favourable results were reported from Ruault, Prof. Schmidt, Prof. B. Fraenkel, Gouguenheim, Prof. Massucci, Prof. Chiari, Gluzinski, Hoppmann, Flatau, Lubliner, Sajous ; on the contrary, Egidi, Massei, and Garel very warmly recommend tracheotomy ; finally Sokolowski, M. Schmidt, and Hoppmann went still further, and asked if it would not be advisable to employ laryngotomy before curetting, upon which subject we already had some information from Prof. Pieniazek, of Krakow.

It is evident that a strict indication can be founded only on very abundant material observed, and it must be equally understood by everybody that a new method can expect its final perfection only through the collaboration of many authorities. These considerations induced the Council to put the question of surgical treatment on the programme of our meeting, and gave me the privilege to enlarge upon points still needing further explanation.

Since I published in the years 1893-94, in the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOLOGY, my opinions on the curability of laryngeal phthisis and its surgical treatment, and further in the same Journal, in August, 1894, the conclusions have been published which I related in the International Congress in Rome and present to you now, I believe it will be better if I leave to my honourable colleagues, Prof. Krause and Dr. Gleitsmann, the indication of those points wanting still

better understanding, and ask the President to grant me, after the closing of the discussion, a short opportunity to plead in favour of my thesis.

By this means I think an understanding is to be more rapidly attained, and it is not necessary that I should once more repeat what is already known; in return, I believe I shall meet the wishes of most of my honourable English colleagues if I speak, after the closed discussions, more in detail of the technique of the method, and communicate to them the results at which I have arrived by my own experience, founded on more than three hundred cases.

1. Tubercle of the larynx, or, rather, the laryngeal phthisis induced by it, can heal by itself without any local treatment. The ulcers situated on the vocal cords and posterior wall of the larynx heal most frequently; very rarely those more serious cases in which the infiltration and proliferation products are attended with deep ulceration; as also those in which the disease extends to the cartilage, accompanied with aphonia and severe dysphagia, leading rapidly to disintegration, and extension to the lungs.

2. *The chief indications in the treatment of tubercle of the larynx, which is almost invariably accompanied with tubercular disease of the lungs, are hygienic, dietetic and climatic.*

3. As in most cases of laryngeal phthisis severe dysphagia occurs, it follows that *the first and most important indication in the treatment to be considered is the removal of the dysphagia.*

4. The second equally important indication touches the special cases in which the breathing becomes difficult, and symptoms of stenosis appear on account of tubercular infiltrations and proliferation products.

5. The third indication has to do with the recovery of the impaired or lost voice.

6. The healing of deep ulcers of the larynx resting on inflammatory infiltrations, surrounded by proliferation products, and certain forms of localized chronic laryngeal tubercle, is effected quickest by scraping, or rather *removal of the tubercular tissue.*

7. *The surgical treatment is indicated*:—

(*a*) In tubercular tumours of the epiglottis.

(*b*) In circumscribed chronic tumour-like infiltrations of the posterior wall of the larynx, which show little inclination to break down.

(*c*) In chronic tumours resting on an inflammatory base, surrounded with proliferation products, *which resist all other methods of treatment.*

(*d*) In partial disease of the larynx, when the epiglottis, false cords and lateral ligaments are affected.

8. *Surgical treatment is contra-indicated*:—

(*a*) In advanced phthisis of the lungs, with hectic and wasting.

(*b*) In diffuse miliary tubercle of the larynx, or rather of the larynx and pharynx.

(*c*) In all cachectic conditions.

(*d*) In severe stenosis of the larynx, caused by inflammatory swelling of the affected parts. In these cases, tracheotomy must be performed as soon as possible.

(*e*) In patients exhibiting fear and nervous excitability, mistrust of the physician, and who are always changing their doctor, *especially those whose condition promises little hope of recovery.*

9. With the proper application of cocaine, the operation itself is not painful. Submucous injection of cocaine is hardly ever necessary.

10. Pyoktanin (one to two per cent. solution) has proved a very good means of preventing inflammation in the parts operated on. It must be applied to the surface of the wound, twice a day.

11. Recurrence takes place frequently at the place operated on, sometimes at a little distance from it. It is explained *not only by inaccessibility of certain parts of the larynx for our instruments*, but also by the imperfect performance of the operation. In most cases, however, the recurrence is due to the disease spreading to the lungs, and the insufficient power of resistance to the infection.

12. *Nearly the whole of the upper part of the larynx* is accessible to surgical treatment, by suitable instruments. It should be a rule in surgical treatment, to excise as much of the affected parts as possible, in one sitting. The double curette has the advantage over the single curette, in certain cases.

13. *It must be explained to the patients and their friends, before the operation, that the dysphagia cannot be removed at once, by surgical interference*; that it is *very often increased for a few days*, and, further, that *the operation does not effect a radical cure.* It is also advisable to tell the patients that the radical removal of the accessible parts is very seldom successful in one sitting; *that in spite of a successful operation, the disease in the larynx may return, and that the physician can give no guarantee of ultimate restoration to health.*

14. The conditions of success of the surgical treatment, in general, depend—

(*a*) On the local character of the affection, its extension and its nature.

(*b*) On the general state of the patient, his nutrition and his strength.

(*c*) On the anatomical character of the affection of the lungs.

(*d*) On the age of the patient, his constitution, his profession, his material circumstances, his temperament and his character.

(*e*) On the thoroughness of the operation itself and the skill of the operator, as well as on the localization of the processes in such places where it is technically possible to perform a radica. extirpation of the infected tissues.

(*f*) On the careful after-treatment, and the capability of the patient to submit to a prolonged dietetic and climatic treatment.

15. In spite of the observation of all these points it is difficult to establish a prognosis; it requires much experience, and in spite of that one cannot speak precisely in a great many cases.

It is an established fact that most patients affected with laryngeal phthisis die of pulmonary phthisis, it is also a fact that a large proportion of temporarily cured cases are threatened with recurrence; but it can also be said positively that in rare instances there has been observed complete cure of the tubercular process in the larynx, which lasted for

years, and that indubitable anatomical proofs have made that fact a scientific axiom; that further partial cures are in certain cases lasting; that dysphagia, dysphonia, and sometimes dyspnœa, can be relieved by surgical operations, and that now we are not so helpless in meeting these dangerous affections as formerly.

16. Serious bleeding after the operation is very rare. It can be readily stopped by the application of a mixture of lactic acid and solution of iron perchloride in equal parts.

17. The want of success in treating cases of laryngeal phthisis by surgical or therapeutic means is often due to the disease being recognized too late for treatment to be of any use.

18. The surgical treatment demands on the part of the physician the greatest self-sacrifice, patience, great perseverance, thorough *knowledge of the operation*, and well-made sharp instruments. *The operation must be done in the patient's home, or in the hospital.* The after-treatment requires the greatest attention and the patient must be kept under observation for months and often years.

19. Bad cases of laryngeal phthisis ought to be treated in climatic establishments set apart specially for consumption. It would be desirable that the physicians in such establishments should acquire the art of operative treatment *so long as we are unable to exercise other means which will take the place of the surgical treatment necessary in many cases.*

20. The power of absorption in severe tubercular infiltrations, as also the likelihood of healing of even extensive ulcerous processes of the larynx, with complete restoration of the voice, has been proved to exist by anatomical and microscopical preparations as well as by long-continued clinical observation.

Mr. LENNOX BROWNE: My friend Heryng has asked me to say a word or two, and I remember that fifteen years ago, at Milan, I was invited to join him in a discussion on this question and that we two were then associated in its initiation with the lamented Krishaber. I have since tentatively and somewhat timorously pursued the intra-laryngeal surgical treatment of tuberculosis. Unfortunately, when I was in Berlin there was another method being tried which prevented me witnessing the success attending surgical procedure under Prof. Krause, for his treatment was then in abeyance in favour of tuberculin.

In England we have the same trouble in pursuance of surgery in relation to throat consumption to contend with as Dr. Delavan has remarked is the case in America. We have great difficulty to get our patients to submit to as radical measures as are carried on amongst the Teuton race. And perhaps it is because women believe a little more in doctors than men, and more readily submit to advice, that we have had our best successes with female patients. In 1887 I operated on a patient who is still living. It was one of those cases—and these are among our greatest successes—where the patient had such pain in swallowing that she said she would sooner die by starvation than attempt to swallow; it was a case of extensive faucial and laryngeal tuberculous ulceration. Under curetting and lactic acid, and I do not believe that the acid itself

is an atom of good without the curetting, the patient made a complete recovery, and her lungs improved also.

It is worthy of note that in a large number of cases, if the lung disease is not far advanced, there is an improvement in the pulmonary disease, consequent on the improvement in the pharyngeal and the laryngeal conditions, and I feel sure I shall be borne out in this statement by Prof. Krause and Dr. Heryng. I would like to say also that my cases have been most successful where, after a short treatment which gives indication of a tendency to improve, the patients have been intrusted to the hands of another residing in a more favourable climate than that of London. I will just mention the case of a lady from Newfoundland. She, who with her brother constituted the last surviving members of a very large family, all dead of tuberculosis, came to London, and having derived a certain amount of benefit from curettement, began to relapse. I sent her down to Bournemouth in 1892, confiding her to the care of Dr. Davison. She has never returned to Newfoundland, but I hear from Dr. Davison, who pursued exactly the same treatment as I had commenced in town, that the patient not only recovered her voice, but that she lost all pain in swallowing, with resulting improvement in nutrition, so that altogether we may look on that case as one cured, at any rate so long as she remains in a suitable climate. I have also had two or three other cases which have derived a like benefit under a similar course of procedure. I only wish that physicians at health resorts, especially those suitable for the tuberculous, would make themselves more familiar with the use of the laryngoscope, so as to be able to supplement the advantages to be gained from climate by adoption of such surgical measures as have this day been described, and have now taken their place as of incalculable therapeutic value.

In conclusion I would say that I have found so much benefit from curettements and lactic acid that I am, after the demonstration we have had to-day, quite prepared to go still further. I have felt hitherto, like Dr. Delavan, that there have been difficulties in the way with the patients, and not only with them but with their medical attendants, who sometimes raise objections to the surgical treatment of tuberculosis of the larynx, simply because the experience of their English *confrères* has not been held to be sufficient to warrant its employment. We shall all be greatly encouraged, I am sure, by the gratifying testimony of our visitors, Prof. Krause and Dr. Heryng.

Dr. LUC: I beg to say that for the last six years I have treated the greatest number of my cases affected with tuberculosis of the larynx with a certain method, and I am glad to say that after some difficulties I have found my task more and more easy. I will be very short, because I think there is little to say after what we have just heard, and my chief desire here is to corroborate, from my experience, what my distinguished friends have just said. If we can but seldom cure our patients, we can nearly always relieve them, and there is a special case in which this task is easy, and I ask permission to direct your attention to this special fact, and I think that Dr. Heryng and Prof. Krause will share my opinion. I think the typical case in which we can be very useful to our patients, and

stop their sufferings at once, is that in which we have to do with an enormous swelling of the arytenoid region, which prevents the patient's swallowing. These tumours can be easily extirpated, and we see a thorough change in the condition of a patient who the day before was unable to swallow a bit of bread. A second point I want to touch upon is what Dr. Heryng said about hæmorrhage in consequence of cutting the epiglottis. I have met two such cases, in which I had to deal with similar hæmorrhage from the epiglottis, and I recognize now that I went too far with my curetting, and, if I had kept myself within the limit prescribed by Prof. Krause, I should have avoided the accident I have referred to. In the second case, in which I had to deal with severe hæmorrhage, I could distinctly see the blood gush from one edge of the epiglottis. After several attempts to stop the blood by means of lactic acid, then by means of a galvano-cautery, I had recourse to another method—viz., the tongs. I passed a curved forceps, by means of which I was able to seize the bits of the epiglottis from which the blood came, and I left the forceps *in situ* for a quarter of an hour. The patient bore the pressure of the instruments very well, and, when I removed them after a quarter of an hour, I had the satisfaction of finding that the bleeding had thoroughly stopped. I am happy to say that this young man, who had an immense infiltration of the epiglottis, wrote to me a few months ago, telling me that he had gained ten pounds in weight, so I conclude his condition is greatly improved. The last point to which I would refer is in regard to technique.

I invented a few years ago a little curette for the special purpose of removing these little nodules from the vocal cords. With this instrument, when you have to extirpate a nodule, you have only to introduce it till it engages the nodule, and then by a simple movement you will very easily remove any projecting surface; and I suggest to Dr. Heryng the next time he goes to Paris to get one of my instruments to assist him in his operations, for I am sure it will be of great benefit to him. I would also ask Dr. Heryng whether he has tried the effect of phenol sulphuricinate proposed by Ruault, which he has found very efficacious during last year. I employed it in the case of a young lady who had infiltration of the larynx, and I had the pleasure of dismissing her after three months' treatment. I have used Ruault's method on a large number of cases in my clinic, and I generally get relief, and in some cases a cicatrization of the ulcerations. It is very difficult to compare one remedy with another, but I would recommend my colleagues to try both, and I should not be surprised if they ended like myself in giving the preference to Ruault's remedy.

Dr. LAW: I should like to make a few remarks in reference to the subject before us, which, I think, may be of particular interest to those members who have to treat patients under bad climatic surroundings. I quite agree with the observations of Dr. John Nolan Mackenzie in reference to the difficulty sometimes experienced in finding a suitable resort in which a patient may obtain the proper special treatment. In 1891 I was consulted by a lady, aged thirty-two, who complained of difficulty in swallowing and most troublesome cough at night. I examined the

throat, and found a swelling of the posterior wall of the larynx and ulceration of the posterior surface of the epiglottis. I prescribed simple sedative remedies, as she was unable to remain in London. A few weeks afterwards her husband wrote to me and asked if his wife could not use the laryngeal insufflations herself. I thought it possible, as she was a most intelligent woman, and I wrote, suggesting she should come to town in order that I might explain to her how to use the insufflation, and also, if desirable, paint the ulcer with a solution of cocaine. She was soon able to put the powder into her larynx by means of an insufflator and an auto-laryngoscope better than I could. I prescribed painting the larynx with menthol in olive oil insufflations, etc., and sent her into the country. For three weeks the reports were favourable. In September she came back with a most irritable cough. I showed her to my friends Dr. Jewell, Mr. Wilkin and Dr. Lauder Brunton, and I suggested curetting the ulcerated surface of larynx. I curetted the posterior surface of the epiglottis, and requested Dr. Jewell to remain in the country with the patient three or four days in order to guide her whilst applying lactic acid to the curetted surface of the larynx. It was in October, and the weather most unfavourable, and my patient was undoubtedly at the end of a week or ten days losing ground. I thought the best thing I could possibly do was to send her away to the Riviera, with instructions to continue auto-laryngeal treatment. Whilst there she applied strong lactic acid to her larynx for several weeks (at Mentone), but I heard, after a fortnight, that there was little or no improvement. At the end of three weeks the ulcer was much smaller, and at the end of eight was perfectly healed. A little while afterwards she wrote and asked me if it were possible that the scar was getting whiter. She had another attack of hæmoptysis, and I saw her again in June of 1893. Drs. Lauder Brunton, Whistler, and Mr. Wilkin examined her larynx, and were exceedingly pleased with the result. I saw her again the next year, and the condition was the same, *i.e.*, a cicatrix. I mention this case to show that even sometimes, if you cannot get skilled treatment, it is worth while to trust our patients a little more than we do. I believe that the patient's life was saved by auto-laryngeal treatment under favourable climatic conditions after successful curettement.

Dr. DELAVAN: The most interesting clinic that I have ever attended was that of my distinguished friend Prof. Krause. I came to Berlin very sceptical with regard to the value of the surgical treatment of laryngeal tuberculosis, not understanding how it was possible that these operations could be successfully performed on the one hand, and on the other how the healing of the laryngeal wounds could be completed afterwards. I believe that if all could see Prof. Krause himself operate we might, perhaps, gain a very different idea of the value of this procedure. Among my colleagues at home, with the exception of Dr. Gleitsmann, there are very few who would even undertake to try the method, because, in the first place, they do not fully understand its technique, and, in the second place, they have not seen the really marvellous results of the method in Prof. Krause's hands. There are, without question, some objections to it, and those objections I beg leave to state with some frankness. I have found in my own efforts in employing the measure that a great deal depends

upon the temperament of the patient. Our patients will not submit to treatment as easily as patients in some other countries will. It is a striking fact that one of the most successful operators in the United States, Dr. Morris Murray, of Washington, has gained nearly all his successes in negroes. The negro is less nervous, and at the same time he is much more manageable. I may say that the best cases that I have seen in my own practice have been those in whom the temperament of the patient and the controllability of his will and mind were such as to make the application of the method possible. That it is a valuable measure I am certain, and would emphasise the fact that to be successful it should be thoroughly understood that the technique should be carried out with refined skill, and with a high degree of precision, accuracy and care.

Dr. SAJOUS: I would like to ask Dr. Heryng if he has ever encountered œdema, for this is an element that we are apt to fear in this class of laryngeal operations.

Dr. MACKENZIE (Baltimore): I have listened with a great deal of interest to the excellent papers on this subject, and have been particularly impressed with the exceedingly valuable and lucid narrative of Prof. Krause. No two men in the whole international world of laryngology are better qualified to speak on this subject than Prof. Krause and Dr. Heryng. It is, therefore, with considerable diffidence that I rise to speak upon the matter. I think the labours of these two gentlemen have placed the fact of artificial cure of tuberculosis of the larynx far beyond the reach of reasonable controversy. It is an established fact that laryngeal tuberculosis, even in the presence of extensive tuberculosis elsewhere, can be radically and permanently cured by intra-laryngeal surgical procedure, or, for the matter of that, without surgical procedure, if we eliminate from the category curetting and treatment with lactic acid. Taking this as a fact, I am prepared for myself, and have actually done so, to follow the lead of these gentlemen in the surgical treatment of this affection. I agree with Dr. Delavan as to the disadvantage we labour under in America with regard to the kind of patients we get, as compared with those our Continental friends are accustomed to. But there are cases in which we are allowed to operate, and I think we do an injustice to our patients if we let the opportunity go by, especially in the presence of intense dysphagia or of intense dyspnœa. I am not yet prepared to advise operations in cases of very diffuse infiltration. In this class of case I operate with some little trepidation, but my experience is not so large as that of my distinguished friend, Dr. Heryng. As to climate, I should, in sending the patient to a health resort, choose a less favoured one, provided there be a competent person at such locality who thoroughly understands intra-laryngeal work. Unfortunately laryngeal tuberculosis kills in any climate and under any circumstance; it is one of the most dreadful forms of tuberculosis with which we have to deal. In regard to Prof. Krause's first proposition, that in *all* cases in which tubercular ulceration is complicated with infiltration surgical treatment is necessary, I am not prepared to accept that in its entirety. I do not believe that in all cases we are justified in operating.

We have to select our cases. The brilliant results obtained by these gentlemen certainly prompt us to imitate their example. As for the operation proposed by Dr. Schmidt, of deep incision of the parts with forceps and other instruments devised by him, I never expect to have any experience with that method. In the treatment of tumours of the larynx, I think that the indication is very definite—viz., that they should be removed as thoroughly as possible. Formerly I used to counsel against the removal of granulation tissue. I looked upon it as a conservative process on the part of nature and an attempt at repair, but, in consideration of the fact that in the struggle between bacillus and phagocyte we have a very unequal battle, I think it the part of safety and prudence to remove, as far as possible, all granulation tissue. In regard to external operations, it cannot be said, in the light of our present experiences, that we have done much to mitigate the sufferings of our patients by recourse to them. They have only brought additional discomfort to the patient's existence, which they have not prolonged, whilst—in some of the cases, at least—they have undoubtedly hastened the fatal termination. At all events and under all circumstances, it seems to me that such operations are not justifiable until after intra-laryngeal methods by an expert have failed to remove the offending tissues through the natural passages ; nor are we justified in those cases of tuberculosis of the larynx in which that organ has been converted from its normal structure into a hopeless ruin, in the presence of extensive pulmonary disease, or in the presence of very extensive tubercular disease elsewhere, except to remove dysphagia or extreme dyspnœa, in resorting to radical surgical measures. Such patients die—they are past all surgery ; and the patient should not be made to bear the cross in order that the surgeon may wear the crown.

Prof. KRAUSE : Gentlemen,—I was prepared to hear a great deal said about my going too far in recommending this operation in rather difficult cases. I think our situation is a somewhat difficult one—I mean our personal situation. I have sent to me a great number of patients in very advanced periods of their suffering ; and especially when a case like the one I have mentioned—the wife of a physician—comes to me, brought by the physician himself, and the patient asks me in the most urgent manner to operate upon her, then we are forced to make attempts to help those miserable patients. I have particularly stated in my paper that I do not claim to cure these cases, but to relieve them. To relieve our patients is, according to my mind, one of the greatest works of our art. I do not recommend the treatment for general use, but we must do our duty in relieving the patients, and if we can master a method, then we shall be able to limit the extent of our operations. If you have, for instance, a patient—and I think it is a matter which touches our feelings—who is young and almost dying of starvation, and you see it is only the impairment of the swollen ary-epiglottic folds, we must do our best to relieve him, or to make him hope that he can be relieved. It is a source of great satisfaction to us to have your promise to again take up this method of operation, and if we take nothing more back with us to our

homes, we take this valuable promise, and I thank you all very much for this acknowledgment of our work.

Dr. HERYNG: The question asked by Dr. Sajous, as to the frequency of œdema after curettement of the larynx, is a very important one. It brings to mind those cases of tuberculous infiltration of the larynx occurring in people who are so sensitive to any laryngeal interference that even painting with menthol or with a weak ten per cent. solution of lactic acid very quickly produces œdema of the infiltrated parts, such, for instance, as the arytenoid cartilages. But these are exceptions. As a rule, the wounds made by the curette close soon enough when sharp instruments have been employed—that is to say, when the borders of the wound are not lacerated. Wounds with smooth edges hardly ever give rise to acute inflammation of the surrounding parts; on the contrary, after the operation the œdema already present disappears very rapidly, because tension is relieved and morbid products and small centres of suppuration find free exit. To avoid infection of the wounds, the best plan is to paint them as soon as the bleeding has ceased with a one to two per cent. solution of pyoktanin (Pyoktanineum cœruleum—Merki).

The solution should be freshly prepared, and the wound should be completely covered over with a dark-blue colouration. For some patients even a two per cent. solution is too strong, and the day after the application the wound is seen to be coated with a greyish film, arising from a necrosis of the superficial layers of the epithelium. This condition is usually accompanied by a redness and tumefaction of the mucous membrane, and sometimes also by an inflammatory irritation, which is set up directly after the application has been made. This is a sign that the pyoktanin solution has been too strong. Generally speaking, solutions of one per cent. are well borne and do not give rise to the greyish false membrane alluded to; on the contrary, the surface of the wound is cleaned, the œdema already present is diminished, and the pain and dysphagia are relieved. Sometimes a three per cent. solution is tolerated, but ordinarily a two per cent. is quite sufficient to prevent a recurrence of purulent infection of the wound after curettement and hasten cicatrization. During the first three days after the operation the larynx should be painted with the pyoktanin twice a day. During the three following days one application is sufficient. The prejudice of many of our *confrères* against pyoktanin is quite without foundation. It is easy to prevent the drug from touching either the patient's mouth or the surgeon's fingers. To remove stains caused by it, alcohol, lactic acid (twenty per cent.), or tartaric acid, are useful. The tartaric acid sticks which remove ink stains are equally serviceable to take out those of pyoktanin.

I consider this drug in two to four per cent. solutions one of the most effectual remedies in inflammatory or suppurative wounds of the pharyngeal, laryngeal and nasal mucous membranes. I have employed it in such a number of cases (including all applications of the galvano-cautery) that I am in a position to recommend it confidently to my colleagues, and I am sure they will not be disappointed with their results.

APPENDIX.

Dr. ZIEM'S paper on "*The Operative and Dietetic Treatment of Suppuration of the Accessory Cavities of the Nose*," contributed by him to the Discussion on the Surgical Treatment of the Accessory Nasal Cavities, presented by title at the meeting on July 25th.

TRANSACTIONS

OF

THE BRITISH LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL ASSOCIATION.

DURING THE YEAR 1895.

LONDON:
THE REBMAN PUBLISHING COMPANY, LIMITED,
SUCCESSORS TO F. J. REBMAN,
11, ADAM STREET, STRAND.

1895.

THE

BRITISH LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL ASSOCIATION.

MEETING HELD OCTOBER 18th, 1895.

President—Mr. G. STOKER.

PRESIDENT'S ADDRESS.

Gentlemen,—My first words must be to express my high appreciation of the honour you have done me in electing me President of this Association. I conceive, however, that deeds more than words will testify to that appreciation, and it will be my best endeavour in forwarding the interests and prosperity of our Association to bear solid witness to my feelings of gratitude. It has sometimes been questioned whether inaugural addresses are at all desirable. Some have thought that the President s address should be rather of a valedictory nature, and should be a summing up rather than an opening speech; but in truth it would seem that, inasmuch as it is and should be the aim of each President to make his year of office the most successful yet on record, it is far better and more becoming to leave the recital of whatever success and prosperity there may be to one's successor.

It is a matter of extreme difficulty to select any subject or find any theme about which to speak on an occasion like this. I have had, I can assure you, hours and days of anxious thought about inaugural addresses, and I propose to give you the result of some of my meditations on this subject. Having passed through a student career, one's first ideas or remembrance of an inaugural address is, no doubt, the words of wisdom and advice which fell from the lips of the physician, surgeon, or lecturer who was selected to open the session at the medical school at which one studied. Such an address, directed to advice as to the best manner of conducting our studies, and to our general mode of life, mental and moral, would be quite out of place on an occasion like this. Besides, our specialty bears such a good moral reputation that it is quite unnecessary to do so. We do, perhaps, sometimes hear whispers; but is it not true that the best and wisest are sometimes carried astray by under-currents of prejudice or jealousy? And do not such conditions

here and elsewhere arise from the inability of certain persons to regard the life and conduct of others except in the light of their own preconceived ideas, or do they not often arise by reason of want of knowledge of the facts that surround some particular incident? Let us hear and judge all men not only with justice, but with the charity that covereth a "multitude of sins." And, first, what of our reflections about retrospective addresses: most interesting and most instructive, especially when delivered at such an Association as this is? Dealing, as they must then do, with a more or less circumscribed area of professional knowledge, they are first of all a *résumé* of work done during the period they allude to. They bring our knowledge up to date, and leave us in possession of the latest advances in our specialty. Besides, they deal not only with medical science, but also with persons. In them we hear again well-loved voices, now hushed in death. They recall to our recollection those who walked and talked among us, who have since passed away. They serve to keep their memories green. They have, further, an influence on the future: the knowledge of the successes and rewards of those who have gone before should stimulate us to further exertions; their rewards and successes may be ours shall we but earn them. And even as we have their successes to stimulate us, we have their errors to warn us. Let us follow the one and avoid the other. There are, however, drawbacks to this retrospective form of address which we must guard against. We must in them maintain a very even mind. In them there are great opportunities of unduly lauding our friends, and of neglecting or overlooking the works of those with whom we are not friendly or in accord; and, further, being, as they must be, a *résumé* or a *réchauffé*, they limit to a sometimes alarming extent the field of original thought. But these are small drawbacks, and easily avoided, and of little moment in comparison with the interest, instruction, and many charms that surround retrospective addresses. Of them it may be truly said :—

> "They're crowned with wreath from angels' fingers;
> In front bright hopes eternal rise;
> Behind, fond memory ever lingers."

At first sight it might appear to some that what I would venture to call a technical form of address is desirable, but that is not my view. Such an address gives an opportunity for airing fads and laying down the law on disputed technical points, and this when no discussion is permitted. It offers a great temptation to be egotistical, and that is never a satisfactory circumstance—to one's audience. Besides, technical addresses are sometimes wearisome and tedious; they are analogous very often to listening to a sermon of forty-five minutes in which one differs entirely from the preacher's interpretation of the text, and the exigencies of the situation prevent decently-conducted people from getting up and leaving at the end of the first quarter of an hour. I think technical subjects had better be kept for meetings after the inaugural address has been delivered. I may say I was on this occasion strongly tempted to give an inaugural address on a technical subject not altogether unconnected with the therapeutics of oxygen gas, but, my sentiments being as above indicated, I cannot conscientiously do so. But do not despair, gentlemen; there is a good time coming.

Nor must the realm of prophecy be denied inaugural addresses. When reluctance to dip into the past exists, and when the present has no charms for us, we may be induced to "rush in where angels fear to tread." This form of address requires courage, if not second sight. It presents the advantage of offering great possibilities for originality, and, like its opposite, the retrospective, may become very egotistical; there are so many points one may prophesy about, and eventually turn out to be correct, if we only give ourselves a sufficient time allowance. For instance, it is possible that before the close of the present century specialists will have agreed what is the best route by which to introduce their remedies into the antrum of Highmore, and, that being settled, they will, perhaps, by a general consensus of opinion before the close of the next century have quite decided what is the best way to get them out again. Then there is the question of the cocci that are now regarded as enemies of healing; it may be that in the distant future, and under certain conditions, they will turn out to be friends. But enough of prophecy; I am treading on dangerous ground. And then, gentlemen, there is the ethical form of address—a most difficult subject to treat, and one which generally ends by treading on everyone's toes. There are some who have concealed in an inner chamber of their mind what they are pleased to call the shield of professional honour; and they spend all their spare time, with a kind of moral chamois leather, polishing up this interesting piece of armour. But when it is produced in public, so bright is it that when the light strikes it, it casts beams into their own eyes, which effectually prevents them from appreciating, with any semblance of justice, the mote they conceive to be in their brother's eyes; and this supposed mote, in some instances, on closer examination proves to be *muscæ volitantes*, the result of functional impairment of the observer's mental vision. If the members of an honourable profession are not sensible of what their conduct should be, presidential addresses will do no good. If they are lost to a sense of their responsibility, and do mean things or act in unprofessional ways, then I regret to think that inaugural addresses will not reform them.

On the whole, I think ethical addresses are not satisfactory. They do not attract sufficient interest. A striking example of this was seen recently. I read an account of the proceedings of the ethical section of a Medical Association. It pointed out that this was the greatest medical combination the world had ever known, and that it had an ethical section; that its members came from all quarters of the inhabited globe, and that it had an ethical section; and that at a recent meeting it regretted that one of the most important ethical resolutions of the present day was defeated by eight to six. It is my belief that the considerations that govern the proper interpretation of our ethical responsibilities must be derived from sources of uprightness and honour residing within ourselves, and not from instruction and correction or censure from without.

And now, gentlemen, with all these and many other thoughts and possibilities in my mind and ever present before me, it is hardly to be wondered at if I hesitated to accept an office, however honourable it might be, which entailed an inaugural address. But I felt I

should be most unworthy if I failed to accept the position. It seems to me that one is selected to fill such a position as I do now for one of three reasons: either because of scientific distinction, or of seniority or because one has a record of faithful service rendered in the interests of the Association he is called upon to preside over; and I believe it is for the latter reason that I was chosen. At the present era in the history of this Association I am especially proud to have been chosen for this reason, as I find in it the highest tribute to our success—that we have lived long enough and flourished sufficiently to reward with the honoured post of President one of our first Secretaries. After the, may I say, most remarkably successful meeting of last July, a new seal of success has been put upon our Association, and it is right and proper that this occasion should not pass without some reference to the labours of our ex-President, Dr. Whistler; of the Honorary Secretary, Dr. Pegler; of Mr. Lake, and the Council, who so well supported them. Theirs was, I am sure, a labour of love; but it is not always that such labours are crowned with unqualified success. Surely our grateful thanks are given to them. We passed through a very difficult time at the commencement of our life. Our childhood was troubled, but progress since has been most satisfactory until now, and "in the full and noonday light our Association the impress of the fulness of a perfected manhood bears." Being, as we are, the British Laryngological, Rhinological, and Otological Association, and the oldest association of this kind in the Kingdom, we can look with satisfaction and encouragement on all who, whether individually or collectively, labour in the same vineyard as we do. And now, on the threshold of my year of office, I wish to strike a note which is, I believe, in perfect harmony with the feelings of all our Fellows: the note is unity. I had occasion, some years ago, when returning thanks for this Association as Secretary, to say that I thought one of the great benefits of such an association as ours is that it should teach us to forget self in our common interest for the development and advancement of our specialty—that all our personal feelings, for good or ill, should be left without our doors. Gentlemen, I have no reason, begotten of experience or otherwise, to change those views then expressed; nay, rather my belief in them has grown and strengthened with the advance of years. I feel sure that it is only by strict adherence to this line of life and conduct that we can ever hope to approach the border-land of that consummation the possibility of whose existence sages have doubted—in whose honour poets have sung:—"Each man's good shall "be all men's rule; and peace lie like a shaft across the land, or like a "line of beams athwart the sea, through all the circle of the golden year."

Mr. LENNOX BROWNE: I rise to propose a vote of thanks for your admirable address, and, in doing so, would ask leave on behalf of the Association to express agreement with all you have said in appreciation of our late President, Dr. Whistler, who, by his special qualifications and relations with his fellows, was so peculiarly fitted to contribute to the success of our summer meeting, when we had visitors from all parts. We also feel delighted—I do especially, being one of those who have worked with you from the very first—to see you in the chair; and we

know perfectly well that if in the coming year we are not all in a good temper, it will not be the fault of the President. We know equally well that a cordial reception and an impartial hearing will be given to all scientific communications.

Dr. McNEILL WHISTLER: Mr. President and Gentlemen,—Would that my voice were strong enough for me to express my thoughts as to the reference which you have made to my poor efforts during the past year, my appreciation for the most able address which you have given us this evening, and my congratulations to the Association that you occupy the chair, and that the welfare of this Society is so thoroughly ensured in your hands.

The PRESIDENT: I am sure I am more grateful than I can express for the kind words which have fallen from Mr. Browne and my friend Dr. Whistler; and, as I said at the beginning, it shall be my endeavour to prove by deeds and not words how much I feel the responsibility you have been good enough to impose upon me.

Case of Paralysis of the Left Vocal Cord. By the PRESIDENT.

My first case is that of a man suffering from paralysis of the left vocal cord. The patient is the subject of syphilis, which he had many years ago, with all the secondary symptoms. He had a swelling on the side of his neck below the ear, which burst, but his troubles with regard to his larynx began a year ago last January, when his breathing became so difficult that he was admitted into the Oxford Infirmary, where tracheotomy was performed. Since then he has had intense dyspnœa, with great stridor and difficulty in breathing, both of which increased every few weeks. When we saw him, the left vocal cord was completely paralyzed; the right partly. He had great difficulty in breathing, and was almost voiceless. No doubt there was some tumour or abscess pressing on the trachea at some portion of its course. The veins of the upper part of the left thorax were varicosed and enlarged, and there was great dulness in the chest just below the left clavicle. He became very much worse, and was brought up, and we thought that we should have to do tracheotomy again, but during the night something burst—as he described it—in his chest. He brought up about half a pint of pus, and was relieved almost instantaneously. Since that he has had paralysis of his left vocal cord. As long as the pus comes away from day to day his voice is improved, and breathing is pretty easy; but when the pus ceases to come he at once becomes bad in both these respects, which shows that there is some cavity there which fills and empties itself from time to time. The quantity of pus has diminished from week to week, and now his voice is fairly good. He still shows a good deal of pressure on the trachea, as evidenced by the stridor. Of course, he is taking the usual anti-syphilitic remedies.

A Case of Syphilitic Ozæna. By the PRESIDENT.

The second case which I have had the honour to bring before you is one of syphilitic ozæna, occurring in a woman of thirty-seven. It was very bad and very foul two months ago, when we first put her on this

treatment by giving her inhalations of oxygen gas. I have observed, as I have said before, that in dealing with ulcerated surfaces of a very foul nature, we find that very rapidly on being subjected to the action of either the pure or diluted oxygen gas the surface assumes a healthy character. This patient was treated in this way, and the smell which had hitherto existed disappeared. What we did was to half fill a bag with air, which was purified by pumping it through lime water and Condy's fluid. The bag was then filled up with pure oxygen. One nostril was plugged with cotton wool, and through the other a tube connected with the bag was passed, which she held in position, and was directed to breathe through her mouth. The results were most gratifying. When she came in there was an outcry from the other patients on account of the stench, but the cry ceased at the end of a week or ten days, because the stench ceased! The crusts and even the necrosed bone had no smell after the end of the first fortnight. Unfortunately for us, she is very near her confinement, and for that reason she decided to leave hospital, and no further treatment has been carried out. To-day there were a good many crusts in her nose, and although the smell was not entirely absent, yet anybody who took the precaution to smell her breath will agree with me that the smell was not at all as bad as in other cases under similar circumstances. I suppose the oxygen has some effect on the micro-organisms (which reside in the nose) in these cases, and serves to purify them. It was for the same reason that I ventured to suggest to Dr. Law the use of oxygen for antral disease.

Case of Double Antral Disease. By Dr. EDWARD LAW.

Dr. E. LAW: I have only one or two remarks to make in reference to this case, which was brought before the society last April. The patient, as I then stated, is a fireman, and had been under treatment for six or seven years with a discharge from the antral cavities of both sides. Six years ago he had a tooth extracted from the right side and an opening made through the alveolus, and was recommended to syringe out the cavity. Twelve months later he had an opening made on the left side. Some time between the openings being made he had a polypus removed from his right nostril at Golden Square.

When I brought him before the society, in April, I thought the profuse muco-purulent discharge had been to a great extent kept up by too frequent irrigation of the antrum. I had very great difficulty in persuading the patient to give up, more or less, all treatment; but after first of all getting him to syringe out his nose with a little warm salt and water, he gave up treatment altogether. In April he had been several weeks with no discharge from the right side, and with the discharge from the left side very much diminished in quantity. I showed the case then in order to ascertain the opinion of the Fellows as to the desirability of closing the aperture on the right side, so that particles of food and other matter should not have the opportunity of passing into the cavity, and also as to the desirability of opening the left antrum from the canine fossa or inferior meatus. The opinion then expressed was that, as the man had

undoubtedly derived so much benefit through the cessation of the treatment, it was desirable to give him a further trial, and I was asked to bring him again before the society. He has only syringed his right antral cavity once since the meeting six months ago. He has syringed it again to-day, and the fluid came through the nostril perfectly clear. On the left side he syringed out probably a teaspoonful of muco-purulent pus, but there was no fœtid discharge.

Mr. Mayo Collier suggested that one might very easily close the apertures temporarily by putting in a piece of iodoform gauze or wool. I tried this treatment, but failed. The patient, who has been accustomed to syringe out his antrum, has tried and also failed.

The patient is able to do his work, but at times complains of neuralgic pains in the face, which he says are nothing like so severe or frequent as they were some twelve months ago. He has done no syringing for three months. Considering the history, that he has been under treatment for five or six years, and has only a slight discharge from the left nostril, which he only recognized after an interval of seven weeks, is it desirable, on the left side, to open into the antrum from the canine fossa, and on the right side to try and close the aperture in the alveolus by means of the galvano-cautery? He has had no treatment for six weeks, no discharge from his nose, no disagreeable smell, no discomfort whatever, except an unpleasant taste in the morning, which, of course, may arise from other causes.

Dr. DUNDAS GRANT: Dr. Law is quite right in considering that there is a time when syringing does more harm than good. I have often thought so myself, and I have, as I have before said, seen improvement follow the closure of the alveolar opening. Of course, it is entirely experimental, and I think in Dr. Law's case it has answered satisfactorily. I might just suggest the advisability of trying the effect of perforating with Krause's trocar, which I have found sufficient for cure in some cases. In a great many it has not been sufficient; but in view of the fact that good results have been obtained, possibly Dr. Law's case might add another to these. In any case, it is a very excellent and easy way for the surgeon to syringe out the antrum, and as this patient would only require it at pretty long intervals, I think it is peculiarly a case in which it might be tried. Nobody can tell exactly what the condition of the lining of the antrum may be, and consequently Dr. Law would have to make a large opening in the canine fossa and curette, and this I think could well be delayed, while at the same time I think it must be recognized that the major operation does not ensure cure in every case.

Mr. BARK: My experience in these chronic antral cases that have been drained by an alveolar opening has been somewhat similar to Dr. Law's in the case he has shown us, and leads me to express the opinion that it is almost impossible to obtain the closure of such openings in cases which have been going on for years without resorting to what is termed the canine fossa operation. In this case, on the left side I would make a large opening through the anterior wall, for one usually finds where suppuration has been going on for years a thickened or fungous

condition of the mucous membrane of the antrum, and this condition can only be treated with any hope of a successful result by a large opening and careful and complete removal of the fungosities by curettement.

Dr. HILL: If I personally were in the condition of the patient Dr. Law has brought before us, I think I should hesitate to allow anyone to open up the canine fossa just now. Although I strongly believe in the treatment—which is more or less radical—by opening the canine fossa, I think the patient is not very bad, the operation is a severe one, and it would be time enough to resort to it when his symptoms become a good deal worse.

The PRESIDENT: If I may say so, I think that with regard to operation I agree with Dr. Hill that it is to be avoided as far as possible. Curettements are not always satisfactory, and the patient is doing so well that it is a question whether it would be advisable to involve him in any risk which might not be for his advantage. I suppose I shall be accused of having "oxygen on the brain" as well as in the lungs if I suggest it should be tried in this case. Our experience has been that it has a very beneficial effect on suppurating surfaces. Its application is extremely simple, and if I could persuade my friend and colleague, Dr. Law, to embark on this very simple method I should be very glad. It could do the man no harm. The whole difficulty seems to me to be that there is an unhealthy condition of the mucous membrane, and the conclusion is that as long as this unhealthy condition exists so long will some opening be necessary.

Dr. LAW: I may say, sir, that the patient has settled more or less the mode of treatment. He distinctly states that he has had no discomfort for the last seven weeks, and objects to have his nose meddled with. At the same time, I have not the slightest doubt that if you would like to undertake the treatment of this case by means of oxygen, I shall be able to persuade the patient to carry out your instructions. However, I think I should like to have him for a month or so longer under my care before it is tried. The treatment suggested by Mr. Mayo Collier has been undoubtedly very beneficial, and if carried out a little longer will probably cure the patient. I have the same objection with regard to oxygen as with Prof. Krause's trocar. It is one of those cases that will probably get well with simple remedies, and the good result would then be put down to the trocar or oxygen. If later there is still purulent discharge, I shall be very pleased to hand the patient over to Dr. Stoker.

The PRESIDENT hoped that the Fellows would have an opportunity of seeing the case again.

Case of Regeneration of Tissue after Turbinectomy. By Dr. WILLIAM HILL.

Dr. HILL: When I embarked on turbinectomy I was a little bit afraid that it might lead to atrophy. We hear on all sides that we must look forward to atrophy as a result of turbinectomies. I have shown this case to emphasize the fact that here hypertrophy has followed, and there has been a regeneration. It has been my experience to see a certain amount of regeneration, after about three months. I have done

very few. I have always seen a little hypertrophy, and sometimes a good deal. In my opinion, it does not lead to atrophy.

Dr. DUNDAS GRANT: I have seen a great many cases, and certainly I have had no reason to suppose that atrophy followed. In fact, there was a case in which the regeneration was so very perfect that Mr. Carmalt Jones thought it was almost too large, and that he was justified in removing it on what, no doubt, was a good therapeutic indication, and provided the pathologist with the means of examining the tissue after its regeneration. The conclusion arrived at was that it was a really good imitation of a turbinal. It was a very good substitute, and I think we are justified in supposing that for all physiological purposes it does sufficiently well.

Mr. BARK: I have done this operation in a few cases, but only for complete nasal stenosis, and can corroborate what has been said.

The condition after the operation in my patients was exactly similar to that in the patient shown by Dr. Hill to-day.

Dr. HILL: I was rather prejudiced against this operation. I have only done it a few times, and then in extreme cases. I regard it as a very excellent operation indeed. It is comparatively easy to perform, and the results in my own hands have been very good.

Two Cases. By Dr. GRANT.

1. *A Case of Adherent Cicatrix of the Membrane partially loosened by means of massive injections of Paroleine into the Middle Ear.*

Dr. GRANT: My first case is one of sunken cicatrix in the posterior segment of the left membrana tympani. I was unable to make it bulge either by inflation or by means of Siegel's speculum, and the patient heard a whisper at eight inches only. Yesterday I injected paroleine through an intra-tympanic tube, and so loosened the cicatrix to a considerable extent from the inner wall of the tympanum, after which he was able to hear a whisper at sixteen inches, which was of course more than double the hearing he had before. What I wish to do is to draw attention to what I think is a valuable use for paroleine. With a simple catheter you could not get it to go in in bulk, but with a tympanic tube it can be forced in, and it is believed to be an absolutely aseptic fluid. I think there is a future for it, and I shall be glad to hear of the treatment being taken up by members of the Association.

Dr. HILL: I always dip the catheter in a weak solution of menthol and paroleine. I suppose two or three minims would go into the mouth of the catheter. I do not know that I have seen any very brilliant results. I know when it has gone into the ear, because the patient feels pain if menthol is used. I shall certainly try the ordinary paroleine, as Dr. Grant and Mr. Lake seem to speak so well of it, although I have never believed in it.

Mr. LAKE: I have used paroleine for over two years, and I cannot say that I agree with Dr. Grant as to the necessity for using an intra-tympanic tube, because I have got very pretty results through the paroleine, never using more than one minim. I have obtained better results with one minim than I have with any quantity above. Dr. Bronner wrote a

paper in which he stated, I think, that one ought to put thirty or forty minims into the tympanum. I should have thought it was impossible, for I do not think it would hold so much. If one drops one minim into an Eustachian catheter, and applies the air douche, there is a fine spray. Also the Eustachian tube, if it has been previously blocked, becomes, after use of small injections, perfectly free.

Dr. GRANT: The methods which Mr. Lake and Dr. Hill have described are very well known, and my experience has been exactly similar to theirs. I was not, however, referring to this at all. What I referred to was a comparatively new application, a new principle in the employment of paroleine. It is simply to exercise a sort of liquid pressure, so as to detach, if possible, by mechanical force, adhesion of the tympanum.

Dr. GRANT, in reply to Mr. Lake's question as to how much paroleine he put in, said: I put in as much as I can get in; in this particular case, I should suppose about half a drachm, of which a good deal did not go in, but ran back into the pharynx, and was swallowed.

The PRESIDENT: The catheter must contain a good deal.

Dr. GRANT: The intra-tympanic catheter would not hold more than three drops, and it requires a considerable amount of pressure to overcome the friction offered by that very narrow tube. I have, in a case in which there was a perforation, washed paroleine right through.

2. *A Case of Cholesteatoma of the Mastoid.*

My other case is that of a man, aged twenty-two, who came to me complaining of great pain in his ear. In the meatus there was a large mass of epithelium in rolls and very much broken down, and some granulations projecting from the posterior wall. On introducing a very much curved probe, I was able to get above these granulations into what appeared to be a cavity in the mastoid region. I had hoped to show the patient to-day, but I syringed out his external meatus yesterday, and I hear now that his temperature is up to 103. I have no doubt that I shall now have to open his mastoid, and shall probably bring him before the society at some future meeting.

Exhibition of Sections of a Rhinolith previously shown before the Association. By Mr. BARK.

Mr. BARK: Mr. President,—A few months ago I had the privilege of reporting and showing here a case of rhinolith. At that time I promised that after section I would again show the calculus, after deciding the nature and character of the nucleus. I now pass round the two portions of the stone, and, as you can see, the nucleus is a piece of slate, probably slate pencil, which must have got into the patient's nose a long time before she presented herself for treatment, for she had no knowledge as to how or when this occurred. From its appearance, I had anticipated the stone to be more friable than it was. It was divided by means of a small fret saw, with very little disturbance of the calcareous material surrounding the nucleus.

The PRESIDENT: I have only seen one or two cases myself, and the nucleus in these was a blood clot.

DISCUSSION ON THE TREATMENT OF MENIERE'S SYMPTOMS.

Opened by Dr. DUNDAS GRANT.

The combination of phenomena—deafness, tinnitus, and vertigo—understood by the term "Ménière's symptoms," and formerly too often as "Ménière's disease," may arise from many causes, and perhaps the least frequent of all is the very one to which the immortal observer who first described them considered them attributable. Without denying the great probability that a hæmorrhagic effusion into the semi-circular canals, as seen by him, is a very definite and even a fairly detectable cause, it must be allowed that, so far as clinical observation and deduction go, anatomical proof of our belief to that effect is completely wanting. Ménière's was a unique observation, and its value is greatly diminished by the very fact that death took place. Effusion into the semi-circular canals could not alone have led to a fatal issue, and we are driven to the conclusion that some other more serious condition was present, which would account for the result, and in great probability for some of the symptoms, which Ménière attributed to the lesion in the semi-circular canals. At the same time, from what we know by experiment of the functions of the canals, there seems every justification for the assumption that such a lesion as Ménière saw in the dead body would produce such symptoms as Ménière observed in the individual during life. Although forced to reject the term "Ménière's disease" as the general nosological designation for the cases we are considering, I do not think it too much if, in honour of the observer who first associated the clinical and pathological phenomena, we apply the name "Ménière's disease" to those cases in which we can attribute the symptom-complex to a hæmorrhagic effusion into the labyrinth, whether or not these form only a small minority of the cases in which the symptoms arise. In other cases let us employ the term "Ménière's symptoms," not as a pathological entity but as a convenient and acceptable expression.

From all these considerations, it will be obvious that the subject for our consideration may be one of a much wider scope than we could desire. It is therefore necessary to limit it to a reasonable extent, and I propose to assume as a definition of "Ménière's symptoms" a condition of vertigo associated with deafness and tinnitus aurium, and arising from disease of the organs of hearing, and it is with this alone that I propose to deal in introducing this discussion.

The conditions giving rise to vertigo may be situated in any part of the nerves or centres connected with the maintenance of equilibrium, whether peripheral or central, and motor or sensory. Among these, we may enumerate derangements of the motor nerves of the eye, producing erroneous ideas as to the relation of the body to surrounding objects; defective muscular sensibility in locomotor ataxy, conveying erroneous impressions with regard to the amount of muscular efforts being made, or requiring to be made; toxic, congestive, or anæmic conditions of the

cerebrum, upsetting the judgment as to the position of the body, and weakening the power of initiating the necessary movements by conscious effort; irritation or destruction of the co-ordinating centres in the vermiform process of the cerebellum by tumours or other morbid conditions; abnormal and inopportune stimulation of these centres, by way of any of the numerous sensory nerve lines leading to them, and especially the vestibular branch of the auditory nerve, when either its peripheral extremities in the internal ear, or its trunk in the interior of the cranium, are irritated in any way.

The disturbance of equilibrium produced thus by irritation of the nerves of the labyrinth is what we are chiefly concerned with, though we cannot leave out of sight the possibility of almost identical symptoms arising from irritation of the intra-cranial portion of the vestibular nerve.

Ménière's symptoms may depend on—

A. Disease affecting the auditory nerve directly:
   (*a*) In its intra-cranial course.
   (*b*) In its labyrinthine distribution.

B. Disease affecting the auditory nerve indirectly from accessions of increase of tympanic pressure due to—
   (*a*) Catarrhal indrawing of the membrane.
   (*b*) Pressure of granulations on the stapes.
   (*c*) Unopposed over-action of the tensor, from—
      1. Antero-inferior perforation.
      2. Paralysis of the stapedius.

C. Hyperæsthesia sensoria et acoustica.

The treatment must then depend very materially upon the localization of the lesion, but it must be admitted that in many cases the nature of the lesion, whether constitutional or local, must determine the general lines of treatment. Thus in *congestive* conditions we may resort to the application of cold to the head, derivation towards the feet, intestines, skin, and kidneys, abstraction of blood either generally by venesection in the arm or locally, by leeching over the tragus or mastoid, or by free incision or even excision of the inferior turbinated body; lowering of the diet and avoidance of excitement; further, by compression of the vertebral arteries and the administration of bromide of potassium or hydrobromic acid. Depressants may be administered with advantage; in gouty cases colchicum and iodide of potassium; in climacteric cases, bromides and small doses of nitrite of amyl and nitro-glycerine; and in general, in full-blooded and otherwise vigorous persons, pilocarpin, more especially when the degree of disturbance of hearing indicates a considerable labyrinthine lesion.

In *anæmic* forms we have to put an end to any direct loss of blood or other source of weakness, and to restore at the same time the qualities of the vital fluid and the tone of the depressed nervous system. Hence we administer suitable food, judicious stimulation by means of spirits or sound red wine, and iron in any of the most assimilable forms; further, strychnia in the alkaloid or in tincture of nux vomica in large and increasing doses. To Mr. Lake, I understand, is due the credit of adding small doses of chloral to counteract the distressing twitching which large

doses produce, instead of leaving off the drug and losing the effect of its continued use. It is, however, with respect to the deafness rather than the vertigo that this point arises. Among other important precautions are the cessation of suckling and of imperfect diet, two potent causes of the anæmia of the labyrinth. In such cases all depressing therapeutic agents, such as colchicum, iodide of potassium, and particularly pilocarpin, must be strictly avoided.

In *hæmorrhagic* effusions, rest both physical and mental is most urgently indicated, with the combined objects of avoiding further effusions from mechanical disturbance and of lessening any injurious effort on the part of the patient in struggling to maintain equilibrium and practise co-ordinate movement, as well as of allowing the accompanying mental confusion to subside. At the same time sudden changes in external air pressure are to be carefully guarded against (witness the occurrence of labyrinthine hæmorrhages in caisson-workers), as also of temperature (note the frequency with which the subjects of Ménière's symptoms have been workers in hot places—stokers, bakers, laundresses, etc.).

Acute inflammatory affections would call for the use of the methods recommended for the congestive form, due attention being given to the circumstances under which they arise, namely, their relation to infectious fevers, apt to be complicated by naso-pharyngeal and tympanic diseases, so that appropriate local antiseptic and surgical treatment may not be unduly postponed, or the valuable timely use of pilocarpin be not prematurely initiated. In mumps the latter drug may be employed throughout; in depressing fevers its use, or at all events its full use, must be postponed till the patient's general strength is restored.

Neuro-vascular disturbances, producing transitory "Ménière's symptoms," call for nerve sedatives and tonics according as exaltation or depression are most marked. Thus, bromides, valerian, and camphor on the one hand, and strychnine, phosphorus, and arsenic on the other, may be called for, the predisposing conditions and exciting causes—excesses of various kinds, periods of life, etc.—being duly considered. I have not seen the well-marked cases such as Prof. Politzer has described, and have not practised the so-called "galvanization of the sympathetic" which would seem so irresistibly indicated.

Arterial tension with *arterio-capillary fibrosis* may produce attacks of vertigo almost identical with Ménière's, and may be mistaken for them, but the condition may form an element of both predisposing and exciting influence in the production of actual labyrinthine vertigo, and no conscientious aurist can leave it out of view. In such cases avoidance of meat-diet and the exhibition of iodide of potassium are called for; and, as Dr. Stephen Mackenzie has pointed out, when the physician's finger on the pulse detects an increase of tension or the patient perceives the first sign of renewal of the symptom-complex, a calomel aperient should be at once administered.

In vertigo arising from an affection of the *intracranial portion of the auditory nerve*, the general principles already laid down must apply, according as the condition arises from meningitis, new growths, aneurism, syphilis, or other less frequent causes.

When the affection producing the vertigo is one affecting the *labyrinth directly*, it must be treated according to its nature, whether anæmic, congestive, hæmorrhagic, or exudative, inflammatory or syphilitic, according to the general principles already laid down.

The *typical "Ménière's disease,"* a *sudden non-inflammatory exudation into the labyrinth*, calls in this place for a more detailed consideration. At the onset, the points referred to with regard to rest must be strictly attended to, and bromides freely administered. As the vertigo gradually diminishes, which it usually does in a few days, as, indeed, experiments on the semi-circular canals of animals would lead us to expect, iodide of potassium may be given, and pilocarpin, unless contra-indicated, injected, especially if the deafness is the most prominent symptom. Should the attacks recur, the precautions inculcated with regard to arterial tension are to be carried out. If the annoyance and persistence of the vertigo overshadow the inconvenience caused by the deafness and tinnitus, resort must be had to quinine, and small doses dissolved in hydrobromic acid have often an excellent effect, while Charcot's large doses should be administered if the vertigo is severe and obstinate.

In the *inflammatory labyrinthine* effusions pilocarpin is, as I have said, of unquestionable value when not contra-indicated by debility, either pre-existing or arising from some simultaneous infective fever.

Of *vertigo arising from indirect irritation of the labyrinth*, little need here be said, if we accept the unquestionable evidence, notably that of Prof. Gellé, that the most typical Ménière's symptoms may arise from disease of the middle ear, affecting the stapedio-vestibular articulation. So striking is the pathological evidence, that Gradenigo, in Schwartze's handbook, gives to this condition the appellation of "Ménière's disease," rather than to the labyrinthine affection to which Ménière himself attributed the symptoms.

Vertigo is not so frequent a symptom in cases in which we believe there is stapedio-vestibular arthritis, nor are the signs of stapedio-vestibular arthritis so frequent in cases of vertigo, as such, that I should go so far in this direction. With Prof. Gruber, I should append the phrase, "with Ménière's symptoms," to the diagnosis of sclerosis of the middle ear, or ankylosis of the stapes.

(*a*) In Ménière's symptoms with chronic middle-ear catarrh I have usually found *indrawing of the membrane* with tubal catarrh, the membrane being often atrophied or in part cicatrized. Restoration of ventilation is the primary indication, and in case of atrophy or relaxed cicatrix the various forms of appropriate treatment, collodion, multiple incisions, or cauterization, the two latter being of no avail until the tubes are free.

(*b*) A *granulation* pressing from time to time on the stapes has, in at least one case in my experience, caused the most intense vertigo, which ceased on the granulation being removed.

(*c*) The *unopposed action of the tensor* is seen in cases of large inferior reniform perforation or cicatrix. It is known that the radial fibres of the membrane, notably in its inferior part, oppose the indrawing action of the tensor. In the event of their destruction the tensor readily brings about

an increase of pressure at the fenestra ovalis, with consequent increase of deafness, tinnitus, and often vertigo. The rational treatment here is primarily tenotomy of the tensor, an operation all the more strongly indicated when synergic action is producing enfeeblement of the other ear. Paralysis of the *stapedius* is believed to allow of a similar action. Apart from its occurrence as part of a paralysis of the facial from cold, I have no data for its treatment.

Lastly, as it is obvious that in many cases the local causes above described are present without any degree of vertigo sufficient to merit the name of "Ménière's symptoms," I made or borrowed for it the name "pseudo-Ménière's disease." Such being the case, we must recognize a *hyper-sensitiveness* to stimulation of the vestibular nerve, and probably of the general sensorium, as a necessary factor in the production of vertigo from middle-ear disease, and to this our treatment has most particularly to be directed. Thus, over and above the regimen best calculated to restore the general nerve tone, we have to administer according to circumstances bromide of potassium, small doses of strychnine or nux-vomica, arsenic in increasing doses, cod-liver oil, and *consolation*. But there is one empirical prescription of the utmost value, and that is quinine itself. The most wonderful effects on the vertigo are produced by small tonic doses of that remedy in the forms of pseudo-Ménière's disease I have described.

The request that I should open this discussion came to me so late that, exhaustive as this narrative may be, it has not exhausted the subject, and stands much in need of the timely "boiling-down" I could have wished to submit it to. At the same time its very obvious shortcomings may lead to the discussion of many interesting points left untouched by me.

Dr. MACNAUGHTON-JONES: I have to thank you, Mr. President, for the compliment you have paid me in asking me to join in a discussion on such an important subject as Ménière's disease. Following on the lines of Dr. Grant's paper, I think you will agree with me that, if we begin to consider all the causes which may produce those characteristic symptoms generally associated with Ménière's name, we shall have to commence with the external meatus and find our way back through the whole labyrinth of otological science. We must discuss all the secondary effects of pressure on the labyrinth, and the treatment of the exciting causes of these would carry us through every condition which Dr. Grant has touched upon. I recently read a short paper at the British Medical Association on a typical case of Ménière's disease and its classical symptoms. I have long been of opinion, and I am sure you will agree with me, that the term "aural vertigo" is most loosely applied, and that we have often wrongly associated with that term Ménière's name. I think that, though we have no strict pathological, anatomical, and physiological grounds on which to differentiate the various forms of vertigo, still that we have, clinically, arrived at a time when we can isolate those characteristic cases to which we ought to apply Ménière's name.

I consider that, in discussing Ménière's disease, we ought to confine

ourselves strictly to those intra-labyrinthine causes which are most in our minds when dealing with direct pressure on the nervous elements in the labyrinth, increased tension in its arteries, or an effusion, due to recent inflammation or otherwise. We need not go through the various causes in the middle ear which may produce these symptoms. We want to isolate those symptoms which have peculiar clinical bearings not only, indeed, on the ear, but on the general condition of the patient who suffers from them—those constitutional states which pre-exist before the onset of the sudden symptoms which lead up to the final seizure that ends in Ménière attack. I myself distinctly prefer to limit the association of his name. I quite agree with Dr. Grant in what he says with regard to middle ear trouble. Unfortunately, we cannot in many cases get pathological appearances to verify our opinions, which are dependent upon past experience, and in which past pathology would indicate that we have an intra-labyrinthine effusion. We cannot say in what part of the labyrinth it has occurred, but we can generally affirm that it is an effusion, and that it is an intra-labyrinthine effusion. If we talk about tumours and other causes, here again we find ourselves landed in difficulty. I would mention the particulars of a case before referred to. The patient was perfectly deaf in one ear ; deaf to every possible test. He had been so for some considerable time. His other ear remained healthy. He had had a slight attack of facial paralysis. We know that by some authorities these cases of facial paralysis, with Ménière's symptoms, are kept distinct from Ménière's *disease*. The facial paralysis passed off, and one day, as he was travelling in a tram car, suddenly he heard a noise as if he were passing through a tunnel, and simultaneously he became deaf. On reaching home he vomited freely, and vertigo followed. The man remained in this condition until I saw him a month or so after the attack. His state then was as follows :—He could not write his name and could not hold a pen (a pretty characteristic symptom of Ménière's disease). He could not stand without support. When blindfolded and made to turn round, he had a tendency to fall towards the affected ear. These are the group of symptoms which I believe to be characteristic of typical labyrinthine hæmorrhagic effusion, and which is of an apoplectic character in the great majority of cases ; and it is to such cases I think we ought to limit the term of Ménière's attack or Ménière's disease. No doubt, in other cases, there is lymph effusion—cases as proved by Politzer's classical cases, and as occurs in some syphilitic cases. I think it is safer to keep our ideas of Ménière's disease confined to such typical cases as this one I have referred to. It is very important to note the increase of arterial tension ; and also of great importance is the age of the patient. The typical examples do not occur in young people. They are occasionally met with in specific cases, but the patients are, as a rule, advanced in life. Therefore, when we find people who suffer from slight attacks of vertigo in the street, who have slight tinnitus on and off, we may judge that we are likely to have in such patients, with rigid arteries, an attack of Ménière's trouble. But what I wish particularly to refer to is, that in these cases there is great importance to be attached to the treatment previous to the first attack, and which is indicated by these prior and

characteristic symptoms. Dr. Grant referred to several points of treatment. I shall simply confine myself to the form of disease which I have specially alluded to, and not to those collateral conditions which arise in almost every case of ear disease. I think our pharmacopœia is very limited—in fact, in some cases I doubt if we do any good by anything we give. I believe that the typical cases are just those in which that much-abused remedy, pilocarpin, renders good service. There are cases in which large doses of iodide of potassium do good, and again cases in which we find benefit from bromides and hydrobromic acid. And I would say that iodide of potassium, in combination with bromide of strontium and ergot, has appeared to me to be in some cases a good combination. Dr. Grant has said he finds quinine useful. Personally, in many of these cases I do not like to try it until a certain time has elapsed, for I think it may possibly cause mischief by the labyrinthic hyperæmia it undoubtedly produces.

I will not take up more of your time now, for I have already occupied it much longer than I intended, but I quite realize the importance of the subject which Dr. Dundas Grant has brought forward. I feel that we want to be more exact in speaking of Ménière's disease, and that the time is coming when we shall be able to differentiate the various forms of aural vertigo, and have them more accurately and clearly classified.

Dr. DUNDAS GRANT: I think that those who heard what Dr. Macnaughton-Jones has said, and what I said myself, can see that our views are practically, I might say absolutely, identical. The importance of pulse tension, which Dr. Macnaughton-Jones referred to, was a point to which I endeavoured to draw attention very strongly. It must be borne in mind that cirrhosis of the kidney produces forms of vertigo which are very apt to be mistaken by a specialist for Ménière's disease. With regard to the limitation of the subject, it is interesting to read Charcot's historical case, which was actually a case of chronic suppuration of the middle ear, and, no doubt, if we saw it here we should call it a case of "pseudo Ménière's disease;" and it was in such a case that this wonderful result of quinine was obtained. I quite agree with Dr. Macnaughton-Jones that these large doses of quinine should not be given as a matter of routine in all cases; but at the same time, if the vertigo so overshadows the other symptoms that relief must be obtained even at the sacrifice of the hearing power, then large doses of quinine may be given, but not otherwise. I thank you for the kind attention you have given to the paper, and I much wish I had been able to make it more complete by describing several cases, which I always regard as one of the most valuable additions that we can give to a discussion.

In reply to Dr. Law's query as to the desirability of extraction of the stapes for Ménière's symptoms, I have no experience to offer, but I have found in the few cases in which patients have come under my care on account of vertigo that milder means have sufficed. Moreover, in some of the reported cases of stapedectomy the operation has been credited with setting up vertigo. Extraction of the incus or section of its long process is probably the most justifiable surgical procedure.

Keratosis Obturans. By Mr. LAKE.

When the external auditory meatus in middle-aged and elderly people becomes blocked up with cerumen, which is not removed within a reasonable time, a secondary affection is caused by the continued irritation of the wax, and a chronic desquamative dermatitis, which is practically a dry scaly eczema, though the exclusion of atmospheric air diminishes the irritation which one would otherwise expect to be present. This desquamation proceeds until the internal portion of the canal is entirely filled with a mass of dead, closely packed, laminated epithelial cells adherent to the most superficial layers of the cuticle. When this occurs, deafness, which has been marked, becomes much more so in that ear, and the entrance of a small quantity of water during ablutions will often complete this—as it does in simple impaction of cerumen—but it may, and not unfrequently does, add a most unpleasant and distressing symptom, *i.e.*, a mild form of melancholia; this only occurs in patients whose neurotic tendencies are fairly well marked (Roosa). I have seen three instances of this quite recently which resembled cases of melancholia that recovered after the removal of impacted cerumen, but not, as in these cases, instantly.

Case 1.—A. B., a highly nervous professional man, called one day in a state of acute depression closely allied to melancholia; he had been but partly relieved of deafness due to keratosis by another gentleman, but since the syringing, etc., more or less pain and tension had been present, which had added to his distress. Fortunately the previous attention had loosened the plug, which I show; and his subsequent behaviour was, for about ten minutes, closely allied to hysteria, and with immediate return of cheerfulness.

Case 2 was a business man who, naturally somewhat taciturn, had become rapidly more so, and at the same time deaf. The removal of the mass in his case was done by the method I am about to advise, and when all was removed he rapidly recovered his former state, and wrote a few days later: "I can do more work in one hour than in one week before my ear was attended to." His work was entirely mathematical calculations. In both cases one ear only was affected.

In treating this affection one has, firstly, to remove the mass, and then to attempt to prevent its subsequent re-formation. Naturally, syringing with hot water is the first thing to be done, but by its means alone one rarely manages to remove the deeper part, and if one succeeds it is usually at the expense of considerable pain to the patient, and has been accompanied by damage to the membrane; so after persevering for some time without success, I prescribe a collyrium of salicylic acid, dissolved in glycerine and water by the aid of a solvent. The acid must not be too strong or it will cause pain, and, in fact, it is always better to anticipate this and add a little morphine to the solution. This is dropped into the ear with a medicine dropper two or three times in the twenty-four hours, and the head kept on the pillow with the affected ear upwards, in order to allow the solution to permeate the mass, and in a few days the syringe will remove the partly dissolved material easily. I am personally very much averse to any attempt at immediate extraction by means of forceps and blunt curettes, as the suffering, though usually temporary, is very

acute, and when people have been deaf for months a couple of days more is of no great moment, if, by so doing, pain is avoided.

Regarding after treatment, that which in my hands has yielded the best results is painting the meatus very carefully with a ten per cent. oleate of lead ointment, with lanoline as a basis; this may be done by the patient either with a camel's hair pencil or a cotton wool mop, the pencil or mop being only just greased with the ointment, otherwise an accumulation of ointment in the meatus will result. One or at the most two applications in the week are ample.

The PRESIDENT: It would be interesting to know something with regard to the frequency of these attacks. My own experience is very small; in fact, limited to one case, and in that case there was the condition which Mr. Lake has described, plus an unnatural quantity of hair, which rather complicated matters. The ear gets stopped up once in six months, and is relieved by a few drops of warm oil dropped into the ear for three nights before being syringed.

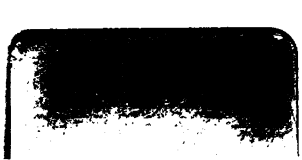
Mr. LAKE, in reply to Dr. Pegler, said he used—

℞. Acid Salicylæ ..... 20 grs.
Borax ..... 25 grs.
Glycerine ..... } āā ℥ss.
Water ..... }

Dr. EDDOWES: I should like to ask Mr. Lake if he noticed whether there was any eczema in these patients. The condition of keratosis among skin cases is often strictly localized and sharply defined. I ask the question chiefly because I have met with so many skin eruptions in which the external auditory meatus has been involved. This is especially the case with seborrhœic eczema.

The PRESIDENT: In the case I alluded to, certainly there was no eczematous condition in the ears.

Withersby & Co., Printers, 326, High Holborn, London, W.C.

41C
33

41C
33